Next Week: CW Hardware Roundup

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NEWSPAPER

COMPUTERWORLD

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The FBI Changes Its Story

By Jeffry Beeler
CW West Coast Bureau

WASHINGTON, D.C. — The Federal Bureau of Investigation has changed its story of why it awarded a multimillion dollar systems contract to IBM rather than to a rival vendor with a lower bid.

The FBI originally said it had decided not to give the award to Vion Corp., which had submitted a low bid of $16 million for four National Advanced Systems, Inc. (NAS) processors manufactured by Hitachi Ltd., because the machines incorporate technology that was "improperly obtained" from IBM [CW, July 19].

Now, however, the FBI is citing purely technological reasons for its selection of four IBM mainframes over an equal number of their less expensive competitors.

The FBI's latest statement on the contract controversy

(Continued on Page 6)

Mitsubishi, Four Employees Indicted in IBM Secrets Case

By Jeffry Beeler
CW West Coast Bureau

SAN JOSE, Calif. — A federal grand jury last week indicted Mitsubishi Electric Corp. and four of its employees for allegedly participating in a Japanese plot to steal IBM trade secrets.

The July 19 indictment accuses the Tokyo-based electronics firm and the four employees of conspiring to have confidential product information stolen from IBM and then transported from the U.S. to Japan. Named in the indictment alongside Mitsubishi itself were:

- Kazuma Ban, deputy department manager at the company's Computer Works.
- Takaya Ishida, an engineer with the Computer

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CPUs Seized In Germany

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — American-made computer equipment believed to be en route to the USSR for military applications was seized in West Germany this month by customs officials there who were working with the U.S. Customs Service and the Royal Canadian Mounted Police (RCMP), according to U.S. Commissioner of Customs William von Raab.

The $400,000 worth of equipment included four Digital Equipment Corp. PDP-11 minicomputers shipped to West Germany by MLPI Business Systems, Inc. of Toronto. MLPI received the equip-

(Continued on Page 6)

China Seen Tapping U.S.

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The People's Republic of China has greatly increased its efforts to illegally obtain Western electronics technology in the past year, according to American military intelligence agencies.

Lt. Gen. James A. Williams, director of the Defense Intelligence Agency (DIA), told the Congressional Joint Economic

(Continued on Page 8)

Good News for Users: IBM Didn't Raise Its Prices

By Tom Henkel
CW Staff

Reveling in the rise of its second-quarter earnings, IBM for the first time in two years has not hiked its prices as part of its semiannual business review.

IBM reviews its pricing structure in the second and fourth quarters of each year. In the past, that review spelled bad news for users, resulting in higher prices as the mainframer averaged 7% to 10% across-the-board increases in processor, peripherals, software and maintenance prices.

This year, however, what has almost become an IBM tradition didn't happen.

"Somebody must have figured out there is a recession out there," remarked Charles Lecht, president of Lecht Sciences, Inc. "They're not raising prices because [systems] are not selling at the price they're at."

While a faltering economy may be part of the reason IBM chose not to increase its prices, other analysts believe IBM is taking advantage of a prosperous second quarter — which saw a 24% increase in earnings and a 17% increase in revenues — to hurt its competition.

William Easterbrook, an analyst with Kidder, Peabody & Co., said IBM could increase its market share over the next six months by holding the line on prices. Traditionally, Easterbrook explained, other computer vendors follow IBM in making price in-

(Continued on Page 4)

H.R. 5158 Abandoned

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — H.R. 5158 is dead.

Lashing out at AT&T for waging a "campaign of fear and distortion," Rep. Tim Wirth [D-Colo.] last week gave up trying to draft a new national telecommunications policy. At his request, the House of Representatives Commerce Committee halted its consideration of the proposed rewrite of the Communications Act of 1934.

Wirth, chief sponsor of the measure, accused Bell lobbyists of orchestrating a massive delaying campaign. "At the rate we are going, this committee will be marking up H.R. 5158 well into August," Wirth said.

One provision of H.R. 5158 opposed by Bell would have required conversion of the company's Long Lines Division into a separate subsidiary. AT&T also objected to letting Bell operating companies market Yellow Pages advertising and terminal equipment — two lucrative businesses that would be transferred to Bell under the proposed consent decree it negotiated with the Department of Justice last January.

It is generally expected that the next move in the battle over national telecommunications policy will come from U.S. District Court Judge Harold Greene, who is likely to decide shortly whether to accept the proposed consent decree ending the U.S. vs. AT&T antitrust case.

User Spotlight

End-User DP Snowballing

By Brad Schultz
CW New York Bureau

Does the increasingly powerful pull of end-user computing suggest that demand for DPers will eventually decline?

By some measures, end users, not DP specialists, account for most mainframe usage at a growing number of large companies [CW, June 21].

End users are also increasingly employing personal computers to solve problems that would otherwise be handled by DP professionals [CW, April 19].

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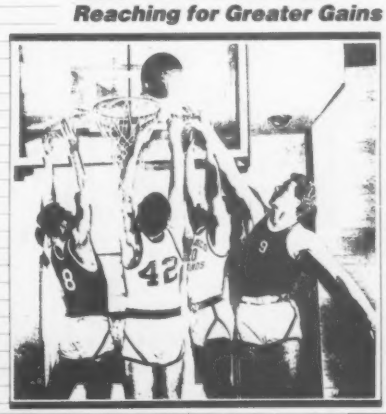
SPECIAL REPORT

Inside — More DP for the Dollar: Reaching for Greater Gains



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Increases Fine, Jail Term

Software Piracy Bill Introduced

By Lois Paul
CW Staff

WASHINGTON, D.C. — Theft of computer software may become a more expensive proposition if a bill introduced recently in Congress is passed.

The Computer Software Piracy and Counterfeiting Amendments of 1982, known officially as H.R. 6420 and introduced by Rep. Barney Frank (D-Mass.), would increase both the fines and imprisonment imposed on those convicted of infringing the copyrights of computer programs and data bases.

"I believe the present penalty is a year in prison and/or a $25,000 fine. The new penalties, if this bill were to be enacted, would be five years in prison and/or a $250,000 fine," Rich Goldstein, a legislative assistant in Frank's office, explained last week.

The bill would extend the criminal provisions in Section 2318 of Title 18 of U.S. Code 2318 and add Section 2319 to include computer programs and data bases.

At present, Section 2318 makes the counterfeiting of labels for phonorecords and motion pictures and other audiovisual works punishable by a fine not to exceed $250,000 and imprisonment for not more than five years.

Growing Problem

When Frank introduced the bill on the floor of the House in late May, Goldstein recalled, he said that theft of computer software was a growing problem that was only going to get worse as computers became more available to consumers.

"The penalties now are just simply too low to be of any real value in deterring people," Goldstein said. "A fine of $25,000, if you are making several hundred thousand dollars or a million dollars by stealing someone else's software, becomes like a tax." In addition, because of the low penalties, prosecutors do not take seriously clients who claim their software has been stolen.

Frank introduced the bill partly in response to lobbying efforts by the Computer and Business Equipment Manufacturers Association (Cbema). Jeff Wood, director of communications for Cbema, said that his organization feels that if media such as phonorecords, motion pictures and other audiovisual works are going to be protected, software should be given similar consideration.

"Given the trend in the industry right now, you are looking at losses in the millions of dollars annually" from software theft, he explained. However, as the value of software increases, losses will total in the billions of dollars.

Cbema would like to see the bill go a bit further than it does, however. "One of the provisions, in particular, limits the permissible number of copies to 65 before criminal sanctions are imposed. We think this is far too many."

Cbema has communicated its feelings to the Committee on Courts, Civil Liberties and the Administration of Justice, which currently is handling the bill.

Cbema is optimistic that the bill will pass."We are hopeful there will be hearings in the next few weeks," Wood said. "If that is the case, it being fairly noncontroversial, they should be able to get it out of the House this session of Congress."

Corrections

"Univac Adds Two Models to System 80 Mini Family" [CW, July 12] reported that the Model 8470 runs on all models of the System 80 line. According to Univac, the disk drive can be used only on the new System 80 Model 4 and Model 6 processors.

The correct price for Atlantic Mangement Systems, Inc's "structured" version of SDM/70 [CW, July 5] is $27,500.

The Audit-6 Computer Corp.'s enhanced version of its Audit-6 Cobol generator [CW, June 14] costs $25,000, not $2,500, the vendor said from 1579 Cavalieri, URB. Caribe, Rio Piedras, Puerto Rico 00927.

Federal DP Meet Set Sept. 28-30

WASHINGTON, D.C. — The theme of the Federal Computer Conference here Sept. 28-30 is "ADP in Transition."

More than 100 speakers from the federal government and the private sector will participate in 39 seminars, sessions and workshops. In addition, a major exhibition featuring the latest hardware, software and services from major suppliers of computers and computer-related equipment to the federal government will be held.

The registration fee ranges from $95 to $350, depending on the seminars and workshops attended, from Federal Education Programs, P.O. Box 368, Wayland, Mass. 01778.

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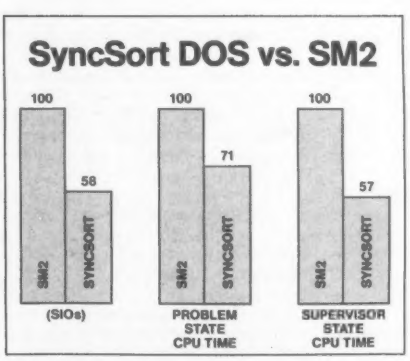

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DP Close-Up

Trends In Banking

As Services, Options Expand

Analysts: Bank Plans Hinge on DP

By Lois Paul
CW Staff

Data processing is becoming a more important part of the overall business strategy of banking institutions because it is serving as a catalyst for the rapid changes that are occurring within that industry.

Options such as electronic banking, distributed data processing, packaged software solutions and microcomputers are increasingly being selected by DP managers in banks, according to several industry analysts.

Keith Huntley of Huntley & Associates, a Cherry Hill, N.J. financial services research and consulting firm, noted that thrift institutions and credit unions are decreasing in number, but will be increasing in size and encompassing new and expanded services. This clearly points to a need for additional DP facilities. As credit unions dwindle in number and simultaneously double in size, they will switch from service bureaus to in-house DP facilities, he predicted.

Expansion of Services

Thrift and savings institutions face a severe situation with the need to change the nature of their businesses in order to survive, he said. Part of the solution for them is the expansion of services, and the route to this is more sophisticated DP. "They are looking at setting up large data processing centers with the necessary sophistication for transaction and item processing capabilities."

There will be an eventual meshing of capabilities among these various types of banking institutions, he explained, as we see fewer but larger organizations. With this trend comes a movement toward in-house systems and shared data communications networks.

Huntley also cited a movement toward distributed processing within the banking industry. In a survey of retail banks that Huntley's firm recently completed, although only 2% of the respondents reported they currently had distributed processing systems, 30% said they felt they would have these systems in place within five years.

Jerry Loev, vice-president of Index Systems, Inc. in Cambridge, Mass., said banks are introducing distributed processing on the basis of organizational control rather than from the standpoint of hardware and software. Along with this switch from trying to be all things to all people, they are shifting away from "running the bank as a factory" with large centralized systems.

Loev cited the increasing emphasis on data communications within the banking industry, particularly in the area of shared Automated Teller Machine (ATM) networks around the country. This is causing a shift in the role of the management information systems manager within banking institutions, he continued, "from being a chief in his own shop to being a negotiator with other banks."

The trend toward electronic banking is affecting several segments of the industry, including retail and wholesale banks, Huntley explained. In wholesale banking, he predicted that large numbers of corporate intelligent terminals will be moved into the treasurers' offices to be connected not only to the bank's own DP center, but also to independent services outside the organization. "So the corporation will be able to initiate money transfer transactions from the treasurer's office," Huntley said.

Real-Time Processing

He also described a strong movement toward real-time processing, which is tied into the expansion of ATM networks with 24-hour demands for cash and services, as well as other factors.

Almost all of those contacted noted the emergence of microcomputerss within the banking industry. Loev said there now is a much broader proliferation of this technology, and banks are attempting to standardize their use of these systems. Some are purchasing large quantities of micros for use by managers for modeling and financial analysis and, in some cases, as very intelligent terminals.

On-Line Service Ready for Banks

NEW YORK — A computer-based electronic information and education service specifically designed for the financial community was unveiled here last week by the Bank Administration Institute (BAI).

Called Innerline, the service is intended to deliver banking and finance-related data via time-sharing and to provide subscribers with access to daily updates on news, issues, regulations and statistics pertinent to the financial industry.

The service reportedly can be accessed via a standard terminal 24 hours a day. Subscribers punch in their private access numbers and receive an index of available services.

Innerline was officially introduced following the successful completion of a 2½-month pilot test program involving more than 100 subscribers, according to BAI.

For members of BAI, the annual subscription fee for Innerline is $240 with a $40 discount for immediate rather than installment payment. For nonmembers, the fee is $300/year. For both, the connect charges are 60 cent/minute. There are additional charges for special financial reports.

Further information about Innerline is available from BAI, 60 Gould Center, Rolling Meadows, Ill. 60008.

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No Price Hikes From IBM

(Continued from Page 1)

creases; this year, however, most have experienced virtually flat second-quarter profits.

If the prosperous IBM can maintain its current pricing structure for the next six months, its competition will either be forced to come out from under the IBM price umbrella or be faced with less profits, Easterbrook said.

"There hasn't been any significant pricing action in the past two to three months," he added, noting that while the rate of inflation has slowed, high interest rates are still keeping users from buying processors.

Bob Colten also thinks IBM is holding the line on prices to increase its market share. "I have never been aware of anything at IBM that was not intentional," said the vice-president for research and development at Strategic Business Services, Inc., a San Jose, Calif.-based market research firm.

Colten added it would have been "scandalous" for IBM to raise its prices during a recession when it is already showing significantly higher profits.

However, Morgan Stanley & Co. analyst Ulrich Weil disagreed. He does not believe IBM is holding the line on prices just to hurt the competition. Its people-costs for software, maintenance and the IBM leasing operation are down as a result of a drop in inflation. That means it didn't cost IBM as much to run its business, and it was not necessary to raise prices, Weil said.

IBM "has more valves to turn than the competition to maintain revenues. They make money or they don't do it," according to Bob Fertig, president of Enterprise Information Systems, Inc.

Instead of raising prices, Fertig said, IBM plans to cut prices by as much as 20% on some items this fall. Fertig mentioned the 3081D processor as one IBM product that is overpriced and is slated for a price reduction.

"All manufacturers suffer from a tremendous erosion in the value of their equipment in a recessionary economy," Lecht said, but part of the reason for IBM's good fortune is the firm's processor delivery schedule. In terms of sales, Lecht said, IBM is not faring any better than other mainframers in the current economy.

Tough Competition Facing Banks, Accenting Need for DP Flexibility

DP Close-Up

Trends In Banking

By Lois Paul
CW Staff

Today's tough economic times are underscoring the importance of data processing within the banking industry. Heightened competition means banks have to be able to move quickly to provide new services both for the customers they have and the customers they hope to attract.

"If you intend to be competitive, it is important that DP be responsive to the need for current information," observed Al Bussington, president of First Computer Corp. in St. Paul, Minn. With deregulation, commercial lending businesses are competing for the banking industry's deposit dollars, he noted.

This heightened competition forces banks to make system changes and additions faster than in the past, he said.

Bussington stressed the need for real-time processing. Because of high interest rates, "a great deal of time value is associated with the current dollar position for investment, transfer and arbitrage of money," he explained. "People want to move funds more quickly. They are more conscious of the value of float and cash positions, and banks have to resond by making data more real-time than in the past."

Bussington agreed that the proliferation of micros in banking is an increasing trend, but he does not see this making a major impact on DP within the industry. However, by handling single-purpose applications, micros can provide a better opportunity for increased productivity than might be available via mainframe systems, he added.

DuWayne J. Peterson Jr., executive vice-president of Security Pacific National Bank in Los Angeles, pointed to electronic, or self-service, banking as a major DP trend within the banking industry. Automated teller machine (ATM) networks and home banking services are key parts.

Check Truncation Coming

He also talked about "continual improvement in the way we handle paper processing," adding, "We will probably see the world of check truncation coming." This refers to the check stopping at the point of deposit and a digitized image of it being transmitted at that point.

Packages have to be the answer when it comes to handling new and expanding application areas, he maintained. "From a timeliness standpoint and just a lack of personnel, we are going to have to rely on packages," he said. "The great challenge for banks involves how they are going to manage this processing of packages while they are, at the same time, trying to integrate their information into data bases."

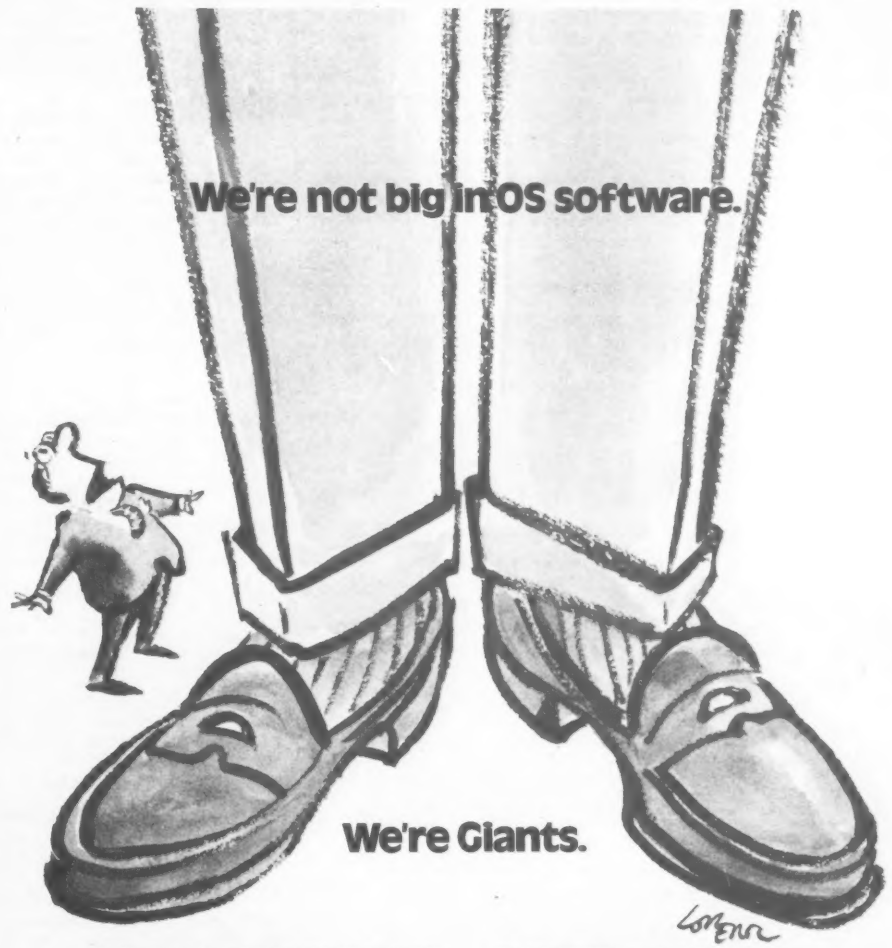
"The real trick for larger banks is trying to move forward on technology and draw on everything that is out there — packages, micros, minicomputers, turnkey systems — and to still have the integration process which is where most of the in-house action has to go on," Peterson said.

Michael Hoogendyk, executive director of the Association for Information Managers for Savings Institutions, described from his Chicago base the DP trends that will impact thrift institutions.

With their movement into more commercial applications, such as trust and investment accounts, thrift institutions are experiencing programming backlogs, he said. They are facing the need to install new packages and add the necessary hardware and personnel resources to handle this processing.

Hoogendyk noted that his organization's 400 members, who have data centers that provide services for savings & loan organizations, is planning a conference in October to address the whole area of information management as an agent for change. They will be addressing the new applications they will be incorporating as well as the DP resources available to help bridge this shift in emphasis.

Bob Sullivan, executive vice-president for Baybanks Data Services in Waltham, Mass., pointed toward the trend toward minimizing paper as an area in banking that must include DP. He said check truncation alone will involve the introduction of computer-based services or, at the very least, new peripherals.



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COMPUTER ASSOCIATES

Vion President Blasts FBI Over Loss of Contract to IBM

By Jeffry Beeler
CW West Coast Bureau

WASHINGTON, D.C. — Federal Bureau of Investigation officials acted "whimsically and arbitrarily" earlier this month when they "improperly" awarded a lucrative systems contract to IBM and rejected another vendor's lower bid.

That angry reaction came here last week from Vion Corp. President P. David Pappert, whose company recently lost a contract for four large-scale processors even though its $16 million bid was $1 million less than IBM's.

The FBI's rejection of Vion's hardware proposal, which called for the delivery of a National Advanced Systems, Inc. AS/9000-2 and three AS/7000s, was motivated by powerful outside "political forces" and has "no merit within the code of federal regulations," Pappert said.

When the FBI was asked to reply to Pappert's criticisms, it referred inquiries relating to the Vion controversy to a federal contracting officer who reportedly was away from his office until late last week and thus was unavailable for comment.

During a July 21 telephone interview with *Computerworld*, Pappert accused the FBI of "arbitrarily subtracting enough subjective points from Vion's technical support capability" to ensure the firm's systems proposal of a lower overall evaluation than IBM's.

Official Protest

Pappert's accusations came just a few hours before his company's attorneys were scheduled to file an official protest against the FBI's contract award at the General Accounting Office (GAO). The protest, which reportedly describes the FBI's conduct in the Vion case as "whimsical," will rank as "one of the most vitriolic documents ever read by government lawyers," the company president predicted.

Yet despite the invective, Pappert sees the protest as little more than a meaningless formality that the GAO is almost certain to ignore. "I fully expect them to stonewall us," he said. "The GAO wouldn't touch this hot potato with a 100-foot pole."

If the mandatory protest falls on deaf ears, as expected, Vion's next legal move will probably be to seek to overturn the FBI's recent contract decision in federal court, Pappert said.

FBI Changes Contract Story, Cites Technological Reasons

(Continued from Page 1)

came during a July 16 debriefing session attended by FBI and Vion representatives. Vion, which sells NAS and other brands of IBM-compatible processors to the federal government, is the competing vendor that underbid the industry giant for the law enforcement agency's contract.

Confirmation of the FBI's July 16 position came later the same day in a three-sentence letter of notification to Vion President P. David Pappert. Signed by Technical Services Division official Kier Boyd, the letter justified the FBI's contract award on grounds that "IBM offered the highest evaluated proposal, price and other factors considered."

As further support for the FBI's contract decision, the letter cited the agency's "lack of confidence" in Vion's ability to "deliver Extended Architecture and Extended Feature Microcoding as set forth in the Vion proposal."

The FBI's July 16 statements contrasted sharply with its previous explanation for why it rejected the Vion contract bid in favor of its IBM counterpart. On July 8, the agency issued a statement that defended its contract award on the grounds that the four NAS mainframes proposed by Vion allegedly incorporate technology "improperly obtained" from IBM. The explanation contained an unmistakable reference to the recent FBI undercover investigation in which 17 employees of two major Japanese electronics companies were either charged or arrested in connection with an alleged conspiracy to steal IBM trade secrets. One of those Japanese firms is Hitachi, manufacturer of the four NAS processors involved in the FBI contract flap.

The FBI's original justification for its contract actions resulted in astonishment and, in some cases, anger among Vion officials and many other industry observers, one of whom characterized the bureau's argument as "ludicrous." How, the observers asked themselves, could NAS mainframes that have already been on the market for at least a year have benefitted from an alleged Japanese theft operation that apparently never got under way until about eight months ago? Moreover, the observers wondered aloud, how could the federal agency justifiably take action against an accused company that has yet to be proven guilty of any wrongdoing?

Potential Pitfalls

Even the FBI apparently recognized the potential pitfalls in its position because during the July 16 debriefing session, the bureau reportedly reversed its original argument and instead stressed the technological reasons behind its systems selection.

Asked to explain why the justification for its contract actions had suddenly changed, the FBI temporarily declined comment. A key spokesman in the Vion matter was traveling for much of the week, a staff member explained, and reportedly was not scheduled to return to his office until after *Computerworld*'s press time.

At issue in the FBI-Vion controversy is a contract for four large-scale processors that will ultimately form part of a fingerprint-identification system in the bureau's National Crime Information Center. In response to a mandatory request for proposals, Vion offered to supply the FBI with one NAS Advanced System AS/9000-2 processor and three AS/7000s, which together were priced at $16 million.

Even though Vion underbid IBM by $1 million, the industry giant eventually won the government contract anyway after proposing to install a 3081 Model D and three 3033Ss worth a total of $17 million.

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Minis Seized in Germany

(Continued from Page 1)

ment from its Phoenix affiliate in June, a U.S. Customs Service spokesman said.

Glen Langdon, president of MLPI, could not be reached for comment. All calls to the Phoenix office about the seizure, which has not yet resulted in any indictments, were referred to Langdon.

The investigation of the shipment, which started when the equipment was shipped to Canada, is part of a federal crackdown known as Operation Exodus that was established last October to halt the illegal export of high technology [CW, March 1]. When the equipment reached MLPI in Toronto, it was stored until Canadian export licenses were obtained.

"The RCMP maintained control of the shipment until it was exported to West Germany via air freight," the Customs Service reported.

Upon its arrival, West German customs officials and the U.S. Customs attache in Bonn watched the equipment until it was diverted from its scheduled route to Switzerland.

German customs officials then moved in to seize the equipment, according to a U.S. Customs Service spokesman.

Langdon named the two West German companies that bought and exported the equipment as Semitech A.G. and Elmont A.G., according to a report in the *New York Times*. However, those companies do not exist in that country, according to Claudia Marwede-Dengg of the West German computer newpaper, *Computerwoche*.

"The cargo was addressed to a small Munich company, Gesellschaft Fuer Rechnergesteuerte Systeme, and to a small company in the German Wuerttemberg region whose name is unknown," Marwede-Dengg said.

Search warrants were served on the Phoenix and Toronto branches of MLPI on July 12, but findings of those searches were not released, he said.

German officials will hold the equipment until the investigation is complete, according to coordinator of Operation Exodus, Gerald Dominick.

Niosh: No Link Between CRT, Health Hazards

By Bruce Hoard
CW Staff

WASHINGTON, D.C — Despite recent testimony from Canadian office workers linking CRT terminal use with a host of health hazards [CW, July 19], officials here at the National Institute for Occupational Safety and Health (Niosh) maintained last week that there is no scientific basis for such claims.

It is outside the realm of possibility that radiation emitted from CRT terminals could be responsible for the miscarriages and ruptured eye vessels reported by the Canadian office workers, William Murray, chief of Niosh's radiation section, said. Measurements made by Niosh are "far below" the threshold of any biological danger and current standards for occupational exposure, Murray observed.

Niosh has performed a dozen surveys on radiation danger dating back to 1975, and "we're convinced there's not a radiation hazard," Murray said. However, the watchdog agency continues to review standards and literature in the area, he added.

Asked to compare the radiation output of CRT terminals and television sets, he replied,"They're fairly comparable."

Barbara Cohen, a research psychologist with Niosh, has heard more concern over possible CRT dangers expressed in Canada than in the U.S. "Time and time again," she noted, Niosh has found no excess radiation associated with the terminals.

After talking with gynecologists and obstetricians, Cohen believed that stress, not radiation, may contribute to miscarriages and birth defects. Stress "does have an effect on the body," she said, "but it doesn't always affect everybody the same way."

Cohen could not pin down the specific number of CRT-related complaints Niosh receives because many are phoned in rather than written, and they are distributed among various staff members. But "it's not uncommon" for Niosh to receive complaints of that type, she said.

Most of the complaints concern visual and muscular/skeletal problems. There is a long list of complaints about red, tired and burning eyes, and backaches, shoulder aches and neck pains are all reported, Cohen said. However, she added that none of the Niosh studies have encountered claims of miscarriages.

Cohen advocated additional research in the area of possible CRT-related radiation problems, but claimed budget cutbacks have hampered such efforts.

In related news, the Canadian Business Equipment Manufacturers Association has told the traveling Canadian Task Force on Microelectronics and Employment that while it recognizes the need for further study to examine CRTs' "ergonomic and social" effects, radiation fears are "totally unfounded."

The vendor group said its members make it a practice in their design criteria to incorporate safety standards that are frequently more stringent than those required on national or international levels.

Managers On the Move

DENNIS P. GELLER has been named director of the Babson College Computer Center in Wellesley, Mass.

Geller, who has authored a number of papers and training films relating to computer programming, has been an adjunct professor at Boston University and an associate professor at the School of Advance Technology at the State University of New York at Binghamton. Most recently he was a technical director at Massachusetts Computer Associates, Inc.

A graduate of Harpur College, Geller has an M.A. in mathematics and an M.S. and a Ph.D. in computer and communication sciences from the University of Michigan.

•••

DAVID S. CASWELL has been elected vice-president of corporate systems for Ryder System, Inc. in Miami. He will be responsible for management of Ryder's corporate data processing and telecommunications.

Caswell joined the company as a group director of management information systems for Ryder's Automotive Carrier Division. He was then elected the division's vice-president of management information systems. Before joining Ryder, he held various DP positions with the University of Rochester, Bristol Laboratories, Service Bureau Corp. and Crouse-Hinds Co.

Caswell earned a B.A. in English from Syracuse University.

•••

STANLEY SOLOMON has joined Lender's Bagel Bakery as DP director. He will oversee all DP operations at the company, including sales and inventory control.

Solomon was formerly a supervisor of clinical data systems for Miles Pharmaceuticals, Inc. and a programmer/analyst with Guardian Life Insurance Co. of America.

He has attended South Central Community College and Charter Oak College.

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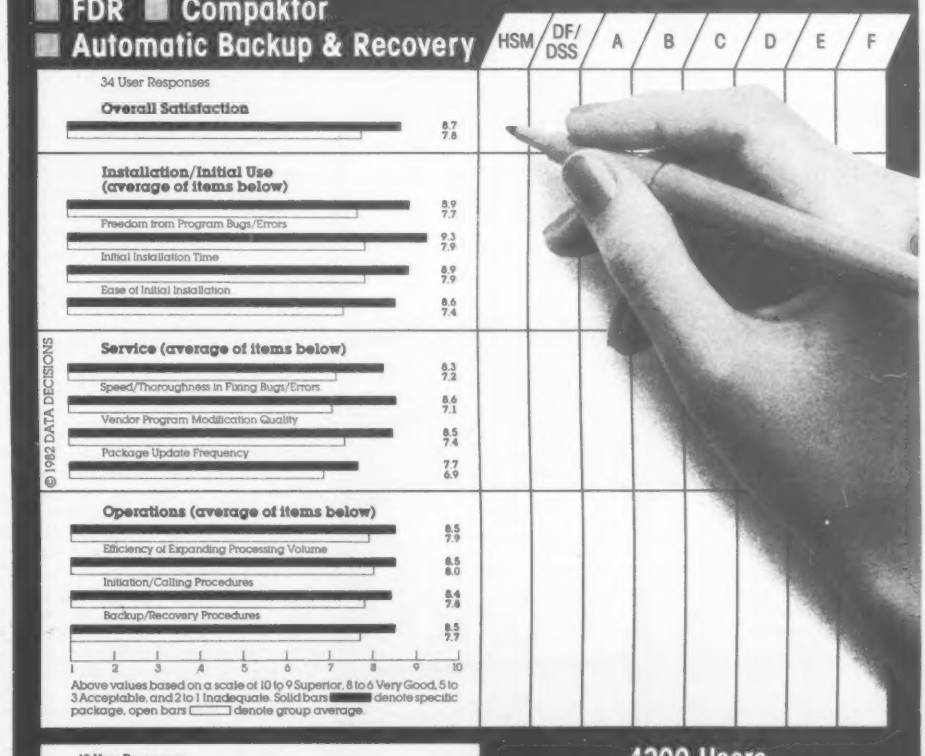

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User Education	7	21	11	0	2.90	2
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China Seen Grabbing Harder for U.S. High-Tech

(Continued from Page 1)

Committee (JEC) in closed-door testimony late last month that the Chinese have become increasingly frustrated at U.S. export controls and resulting delays in technology acquisition.

"Evidence of Beijings's frustration over its inability to obtain a more desirable rate of access to and use of advanced technology is reflected in a reported significant upsurge in the past year in surreptitious efforts to obtain Western computers and microelectronics technology," whose sale to Communist countries is restricted by agreements between the U.S. and its allies, Williams said.

William's testimony, released in "sanitized" form last week by Sen. William Proxmire (D-Wis.), vice-chairman of the JEC Subcommittee on International Trade and Security Economics, presents an analysis by several DIA branches of the outlook for the Soviet and Chinese economies.

Severe Problems

Both nations, the DIA said, have "severe economic problems." The two nations will continue to rely on Western technology of many different types to bolster their inability to apply adequate resources to domestic technological development.

While there has been growing concern here about Soviet efforts to legally and, increasingly, illegally obtain Western electronics equipment and know-how — "a continuing high priority for the Soviet leadership in the 1980s," according to the DIA analysis — little attention has been paid to similar Chinese activities.

Trade restrictions between the U.S. and the PRC have been greatly relaxed since 1979, when China was granted Most Favored Nation Status by the U.S. Successive actions in February 1980 and June 1981 further reduced export restrictions on certain types of military equipment. Total U.S.-PRC trade was valued at $5.5 billion last year and under optimal conditions might reach $6.5 billion this year, Williams noted.

Williams reported that "China's large electronics industry, which has recently been somewhat reorganized, continues to make steady if unspectacular progress."

Despite this progress, "an important aspect of the comprehensive defense plan formulated by the Chinese is the acquisition of advanced Western technology."

Increased Criticism

He continued that "while the PRC has utilized [existing] legitimate channels to secure some appropriate technology, the Chinese have recently expressed increased criticism of U.S. export controls." Efforts to circumvent those controls by clandestine acquisitions have recently increased, he said. Any details on these activities he might have provided the JEC, however, were not made public.

"While the Chinese government does not seem to have devised a formal policy concerning illegal efforts for the importation of foreign technology, it is likely that the PRC is utilizing commercial channels and science and technology exchanges to supplement gains from legitimate purchases." Williams warned of "ploys such as the establishment of bogus trade companies, the use of friendly countries as third parties, misrepresentation of end use and the use of Chinese delegates and exchange students to . . . bolster legitimate trade methods of obtaining technology needed for the military modernization program."

These are the same methods used — very successfully, according to numerous recent reports — by the Soviet Union to acquire Western electronics components and manufacturing data.

Mitsubishi Indicted in IBM Secrets Case

(Continued from Page 1)

Works Planning Group.

• Akira Iwase, a Computer Laboratory staff member.

• Chiyoji Tanaka, group manager of the firm's Information Systems and Electronics Development Laboratory.

One of the suspects, Ishida, was slated to appear in court before U.S. Magistrate Nordin Blacker on July 22. The other three have been given an Aug. 19 deadline to do likewise.

Evidence against Mitsubishi was originally supposed to have been presented to a grand jury in late June. However, the company's attorneys successfully argued for a brief delay to give themselves an opportunity to familiarize themselves with the case against their client.

Mitsubishi holds the dubious distinction of being the second major Japanese electronics corporation to be indicted recently in connection with the IBM trade-secrets theft scandal. The other firm is Hitachi Ltd., which was indicted late last month in a grand jury action that also named as defendants 11 of the vendor's employees and three non-Hitachi workers [CW, July 5].

Like Mitsubishi, Hitachi and the 11 suspects on its payroll currently find themselves charged with conspiracy to transport confidential product information, which they apparently believed to have been pilfered from IBM. The other three Hitachi-related defendants, meanwhile, have been indicted for receiving and transporting stolen property.

Although both Hitachi and Mitsubishi were allegedly engaged in similar kinds of industrial espionage against the same U.S. target, neither company was apparently aware of the other's activities. The result is that federal law enforcement authorities are treating the Hitachi and Mitsubishi operations as parallel but separate cases.

On the Mitsubishi front, an affidavit filed recently in federal District Court here accuses the company and its four employees of recruiting an FBI undercover agent to steal proprietary information about IBM's latest medium- and large-scale systems.

Included in the Japanese company's alleged shopping list was information describing the design and manufacture of microcircuits for IBM's 4300 and 3081 series processors, documents containing the designs and source microcode for the 3880 disk systems controller and tapes storing source code for 4300 and 370 series diagnostic programs.

Paid Agent

In return for the designated items, the Mitsubishi employees allegedly paid the FBI agent, who was posing as a dealer in gray-market high technology, a total of $26,000 — a pittance compared to the $622,000 reportedly paid by Hitachi. The materials were then to have been secretly shipped back to Japan, where presumbably they would have been used to speed the development of Mitsubishi's first IBM-compatible computing products.

But the alleged espionage scheme was foiled on June 22 during the conclusion of a six-month FBI "sting" investigation that netted a total of 22 suspects. Eight of the individuals have already pleaded innocent to the charges against them, and 12 others remain in Japan where Japanese Ministry of Justice officials are still pondering the touchy issue of extradition.

Yet another suspect, Tomizo Kimura, recently had the charges against him dropped for lack of evidence.

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DPMA Offering Workshop Series On Management

PARK RIDGE, Ill. — The Data Processing Management Association (DPMA) is offering a series of workshops on management training and development both to its membership and to interested companies and organizations through local DPMA chapter sponsorship.

Called Project Management Assistance Program (MAP),the workshops are ongoing throughout 1982 in a score of U.S. and Canadian cities. The three programs now being conducted are "Leadership Results Through Others," "The Communication Process" and "Problem Solving."

Two topics will be added in September:"Principles of Decision Making" and "Defining Goals and Objectives."

Cost of each workshop ranges from $35 to $75 per person, depending on the number of participants and the local chapter's cost for presenting the program.

Further information on Project MAP can be obtained from DPMA International, 505 Busse Highway, Park Ridge, Ill. 60068.

DPers Charged With Stealing CPU Time

By Jeffry Beeler
CW West Coast Bureau

LOS ANGELES — Two programmers face possible prosecution for allegedly stealing their employer's computing time to help support their own programming business.

County law enforcement authorities have accused Frank Lewis and Kathy Benedict — both employees of CHB Foods, Inc., a local food wholesaler — of secretly running Certified Food, Inc. programs on a CHB mainframe.

Certified Food, also a local food wholesaler, had offloaded part of its in-house programming burden to an independent contractor known as Arid Computer Co., which Lewis and Benedict operated in their spare time. The two suspects then fulfilled their contract obligations to Certified Food by allegedly doing the requested DP work on a system intended exclusively for CHB applications.

CHB never authorized the use of its computing resources by another organization and apparently knew nothing of Lewis' and Benedict's outside business dealings when the pair were first hired, according to local deputy District Attorney Clifton Garrott. Nor was Certified Food ever aware that the job it had assigned to Arid was being performed on another company's processor without the owner's knowledge and approval, Garrott added.

Both Lewis and Benedict have pleaded innocent to the charges and are scheduled to appear in court here for a preliminary hearing in late August.

Convincing Story

The alleged theft of CHB's computing time began sometime after July 15, 1981, when Lewis joined the company as a programmer. At the time, the firm was in the midst of updating its wholesale pricing programs, and Lewis soon convinced his new employer that its programming staff would have to be expanded to accommodate the additional work load. Acting on the newcomer's recommendation, the company eventually hired Benedict as a programmer. CHB was never informed of Lewis' and Benedict's alleged ties to Arid, Garrott said.

For several months, the two new programmers purportedly divided their on-the-job time between their legitimate work for CHB and their clandestine activities on behalf of Certified Food. To prevent their alleged extracurricular efforts from being discovered, the suspects barred their co-workers from CHB's machine room before they began running their secret client's tapes.

The unusual precautions soon aroused the suspicions of their fellow programmers and eventually came to the attention of their superiors, who initiated an investigation. Evidence of suspected wrongdoing first came to light shortly before last Christmas. In January, Lewis and Benedict were fired from their CHB positions, and on April 29 they were arrested and charged with computer fraud and grand theft.

Clerical Aptitude Tests Found Fine for Programmers

NEW YORK — Conventional clerical aptitude tests have proven equal or superior to tests designed specifically for DP to predict the on-the-job success of programmers, according to research performed by Industrial Psychology, Inc. (IPI) here.

The result was completely surprising, Stanford Sobel, the firm's president, reported.

During the past few years, IPI has administered both conventional clerical and specialized DP aptitude tests to personnel on behalf of clients that were considering setting up training programs for clerical employees with no DP experience. The battery of IPI-developed clerical tests included a parts test designed to determine the ability to see the graphics whole in relation to component parts, a numbers test to determine the ability to do simple numerical computation and a grasp of underlying mathematical concepts, a judgment test to determine skills in figuring out solutions to abstract problems and a perception test to determine the ability to recognize details in words and numbers and perceive errors rapidly.

Sobel observed that the probable reason clerical tests are such good predictors is that they gauge a person's general intelligence. Specific DP tests have the same components, but contain other facets such as matrix-formation skills, which may or may not be necessary to test prior to placing a person in a training program.

Companies interested in training DP personnel find that the clerical ranks provide a good pool of talent for potential computer professionals, but because the cost of running training programs is so high, companies want a valid way to select candidates that have a good chance of doing well in the profession. IPI has validated its findings by comparing clerical test results with actual job performance based on ratings of supervisors. An executive summary of IPI's research is available from the firm at 515 Madison Ave., New York, N.Y. 10022.

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Increase in End-User Computing to Hurt DPers?

(Continued from Page 1)

Does this suggest demand for DPers will eventually decline? In decades to come, the need for humans to maintain computers may dwindle because computers are being given artificial intelligence to diagnose and treat their own hardware and software ailments. Futurists predict that a single microprocessor chip will be able to emulate most of an entire DP department's functions before many of those who have just begun computing careers are ready to retire.

Other Reasons

These trends are reasons for DP professionals to reassess their relations with end users, as well as where their careers are heading.

User Spotlight

Others include:

- Separation of systems management from information management.
- A move toward parity between what end users know about computing and the company's business and what DP professionals know about computing and the company's business.
- A decline in the technical expertise necessary to operate sophisticated systems.

Besides technological developments that make computing available to the masses, there are economic, political and psychological incentives for ordinary people to want less dependence on a formal DP department. System development or upgrade projects that last years and cost millions of dollars are especially unsettling to top management amid a sour economy. Moreover, end users are wise to the political value of controlling systems and data bases themselves.

What systems end users cannot control or directly use, they often resist — sometimes going so far as to sabotage them. A few researchers argue that end-user resistance to information systems stems from conflict between organizational goals and the systems' design goals, rather than purely from traits of the resisters or purely from traits of the systems.

Annual Increase

At a recent seminar, the director of MIT's Sloan School of Management's Center for Information Systems Research (CISR) said many U.S. companies are experiencing a 50% to 100% annual increase in end-user computing in terms of millions of instructions per second (Mips), executed on large systems, typically under time-sharing arrangements. Dr. John F. Rockart also described an increase in direct utilization of information systems by chief executive officers (see story on Page 11).

CISR researchers have warned that as end users computerize more and more, they may repeat some of the worst mistakes made by DP professionals over the past few decades. These management scientists have indicated that many companies will buy new computer-related technologies (such as office automation) much like they bought computers: slowly at first, then — after marveling at the benefits of their initial purchases — buying in such a frenzy that top management will feel compelled to impose tight controls on procurement and usage.

Market research firm International Data Corp. views office automation as falling under the jurisdiction of the corporate DP or information systems department, at least through the forseeable future. At a recent conference, Haines Gaffner, the president of IDC's Link Resources Corp. subsidiary, declared that while many companies have initially acquired access to various videotex services through end-user departments, a number of the companies are relying on their systems departments to support this access.

Not Wanted

However, William Cornfield, Chemical Bank's vice-president and director of electronic information services, responded that systems departments "will want nothing to do with" videotex, which in many organizations is provided as an internal service to the offices of end users.

End users in some companies have begun "marketing" their new technical prowess in computing to other end users, causing the general end-user population to revise their opinions on the need for service from a centralized DP department. A few large companies — two examples are ITT and McGraw-Hill Co. — have divorced management of computer systems from management of the information that flows through them [CW, Dec. 28, Jan. 4].

This trend toward "data administration" or "information resources management" is seen by a number of management scientists and coteries of consultants and users as inevitable for most organizations beyond a certain size. Where the DP department may yet be cloistered in an ivory tower, intimidating end users with arcane jargon, these observers see the beginnings of massive reconstruction.

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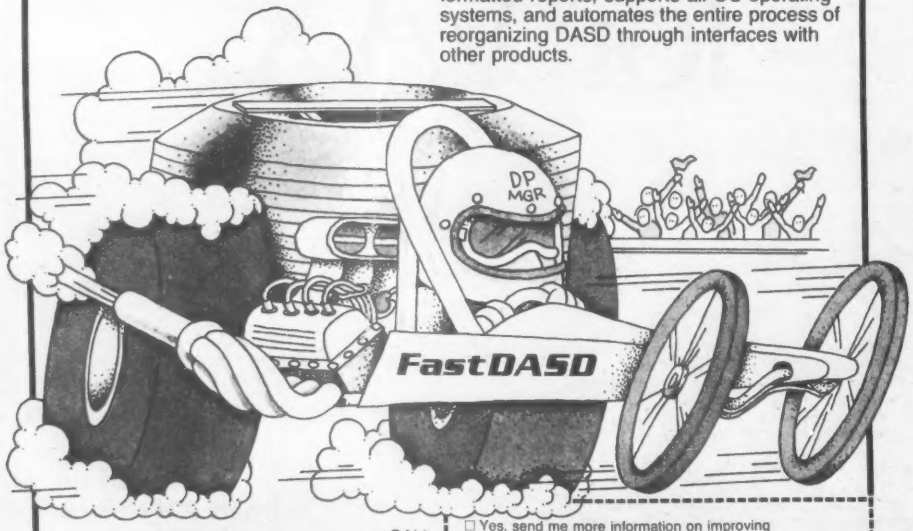

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CEOs Going On-Line in Increasing Numbers

By Brad Schultz
CW New York Bureau

The president and chief executive officer (CEO) of Northwest Industries, Ben W. Heineman, operates a terminal for a few hours of nearly every working day, accessing reports and executing his own analyses of Northwest's nine operating companies.

U.S. Treasury Secretary Donald T. Regan inauguarated a similar on-line tap while serving as president of the brokerage house Merrill, Lynch, Pierce, Fenner & Smith, Inc.

User Spotlight

The current president of Merrill Lynch as well as the chief financial officer regularly use graphics terminals to receive reports on the firm's worldwide operations.

Other CEOs who routinely employ direct ties to information systems include Wausau Insurance Co.'s chairman and CEO, John Schoneman; chief operating officer, Gerald D. Viste; and the president of Thermo Electron, George N. Hatsopoulos.

Those examples of executive computing were given at a recent seminar by Dr. John F. Rockart, director of the Sloan School of Management's Center for Information Systems Research (CISR) at MIT. In a recent *Harvard Business Review* article he wrote with CISR's Michael E. Treacy, Rockart noted that Hatsopoulos "writes programs in the APL language to format data contained in several of his company's data bases. As a result, he can quickly study information about company, market and economic conditions whenever he desires."

Several Conclusions

In a working paper released by CISR last year, Rockart and Treacy listed several conclusions, applicable to large companies generally, from a study of how 20 companies provide senior managers with direct access to computer-based information. Among their findings:

- The number of senior line managers who directly use systems is small, but growing fast.
- These executives mostly view direct ties as improving their performance in planning and control.
- The executives find most prevalent ideas on managerial use of computer-based information to be helpful, but incomplete, as guidelines.
- Some companies have successfully provided their top management with on-line access to information for a number of years.
- Many techniques successfully used to manage development of other kinds of systems will undermine development of executive information systems.

While Rockart and Treacy have indicated that the market for executive information systems is promising, some market research firms have indicated that executives have far less need for on-line ties than subordinate grades of managers and professionals. According to an International Data Corp. (IDC) report, Xerox Corp. found more than a year ago that at Xerox "executives spent far less time writing and reading than managers and supervisors: 32% vs. 60%. The time not spent doing these activities is instead spent in meetings (46%)." According to IDC, Xerox discovered that its executives lost no measurable time on calculating, but calculating occupied 8% of a manager's day and 1% of a supervisor's day.

Xerox executives may account for a tiny portion of the million instructions per second (Mips) turned over by the company's mainframes, but one of those executives told another CISR seminar that by 1990 end users in general will account for 75% of Xerox Mips. Rockart and Treacy determined that the "driving force" and "most significant user" of the executive information system at Northwest Industries is CEO/President Heineman, who "programs using the Express language and a full 10-finger typing approach to the keyboard." The executive information system at Weyerhaeuser Corp. reportedly was instigated by the forest products company's controller. The data access language for that system is Mark IV.

IBM established an executive information system in the '70s so a corporate officer and others on the vendor's "business plans staff" could improve their ability to answer complex strategic questions posed by the chairman and president, according to Rockart, who left IBM to join Sloan in 1966.

Rockart and Treacy noted that IBM set up a three-part data base for this system. "Unlike Weyerhaeuser, where all the data is a by-product of internal divisional operations, only one part of the IBM data base comes from the routine transaction processing systems which support day-to-day operations," they wrote.

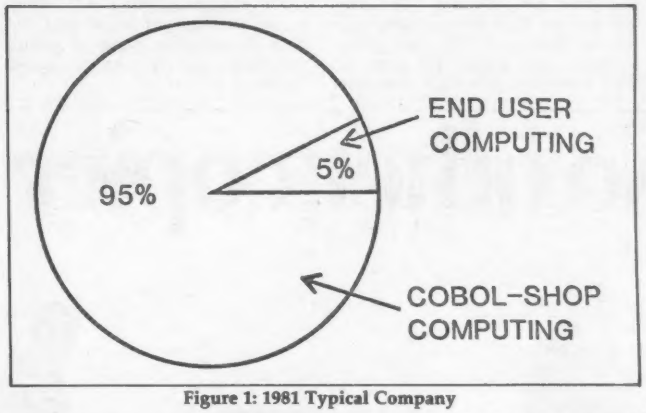

Figure 1: 1981 Typical Company

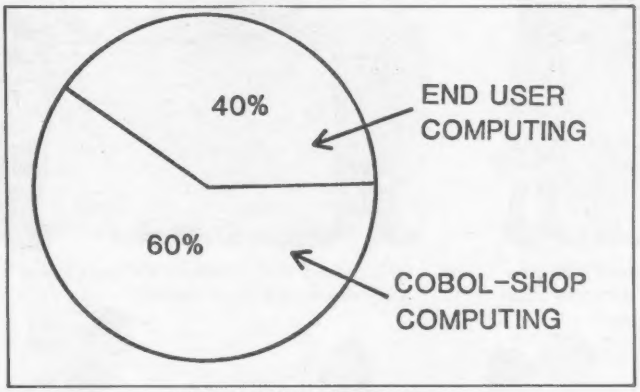

Figure 2: 1981 Leading Company

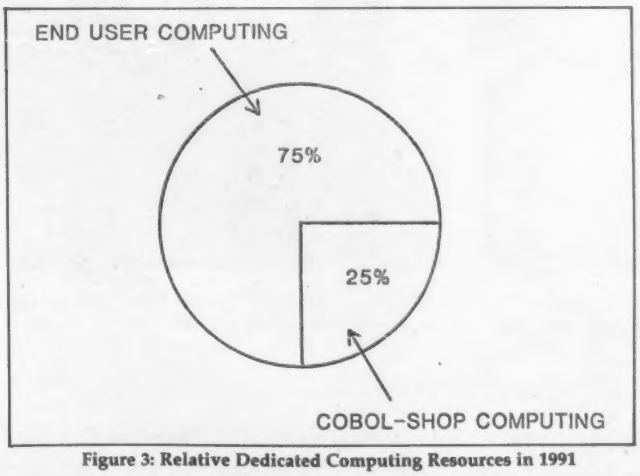

Figure 3: Relative Dedicated Computing Resources in 1991

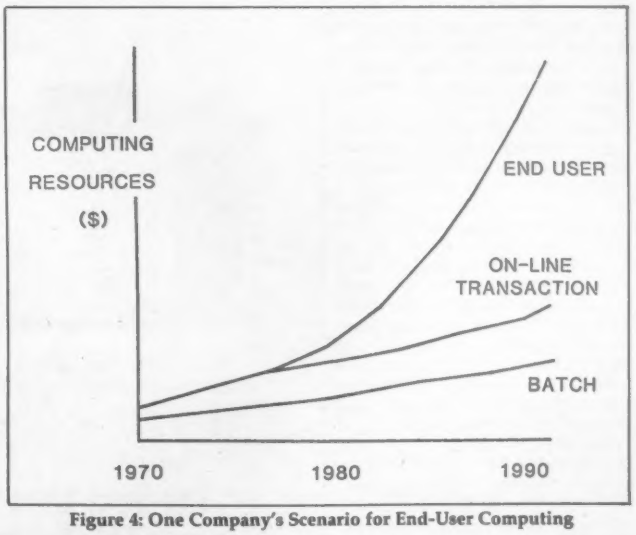

Figure 4: One Company's Scenario for End-User Computing

Michael E. Treacy, assistant professor of management science at MIT Sloan School of Management's Center for Information Systems Research (CISR), used the above figures in a recent talk on end-user computing. In terms of millions of instructions executed per second (Mips) on major systems, Treacy estimated that end-user computing accounts for about 5% of all computing at "typical" companies (Figure 1), but is a whopping 40% of the total at one "leading" company (Figure 2). CISR Director John F. Rockart has said that end-user computing exceeds 50% of the total at a number of large firms and is growing at a 50% to 100% annual rate. By 1991, "Cobol-shop" computing — the processing done by DP professionals — will diminish to a quarter of the total at many corporations, Treacy predicted (Figure 3). The fourth figure suggests that, at one company, dollars of investment in total computing will rise sharply in the next decade, with end-user computing accounting for most of the increase.

FCC Gives Dems Green Light to Five Carriers

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Five communications carriers won permission this month from the Federal Communications Commission (FCC) to build digital electronic message services (Dems). As a result, within the next two years data communications users will probably be able to lease end-to-end broadband transmission facilities at rates substantially lower than what they currently pay to AT&T.

The five carriers that got the green light from the FCC are Satellite Business Systems, Inc. (SBS) of McLean Va.; ISA Communications Services, Inc. (Isacomm) of Atlanta; Contemporary Communications Corp. of New York; MCI Telecommunications Corp. of Washington, D.C.; and Tymnet, Inc., based in Cupertino, Calif.

Each carrier is building a network encompassing 40 or more cities, including all of the largest metropolitan areas. Within each area will be a digital termination system (DTS) consisting of one or more transceivers communicating on a full-duplex basis with user stations up to about seven miles away.

Makeup of Dems Network

A Dems network consists essentially of DTS connected by terrestrial or satellite intercity communications channels. All five of the newly authorized Dems carriers will utilize a system developed by Local Digital Distribution Co. of Rockville, Md.

Each of the five Dems carriers authorized by the FCC expects to have its first DTS system up and operating by the end of 1982 or shortly thereafter. Generally, the Dems will operate at speeds of 2,400 to 56K bit/sec and include all the popular transmission rates in between.

Among the applications that the Dems will support are electronic messaging, teleconferencing, bulk computer-to-computer file transfer and digital high-speed facsimile. A number of the carriers also plan to provide speed/code/protocol conversion, enabling dissimilar terminals to talk to each other.

According to a Tymnet official, DTS will make it possible to deliver 256K bit/sec of bandwidth to a user's site for about half of what AT&T now charges for 9,600 bit/sec Dataphone Digital Service (DDS). The phone company has announced, however, that it will file new DDS rates later this year that may be considerably lower than the present ones.

Another competitive threat is posed by Bell operating companies. At hearings earlier this year on pending telecommunications legislation, a number of Bell operating companies' executives indicated interest in offering Dems services.

Meanwhile, some 25 other Dems applications from such firms as Western Union Telegraph Co., RCA Corp., GTE Telenet Communications Corp., Southern Pacific Communications Co. and ITT World Communications Co. are awaiting FCC action. A commission spokesman said last week that another group of service providers are likely to be authorized in about a month.

Employee Faces Theft Charges For CAD System

WOBURN, Mass. — An employee of Applicon, Inc. is scheduled to face a grand jury trial this week on charges that he stole a $120,000 computer-aided design (CAD) system from the Burlington, Mass.-based firm and allegedly sold it to an undercover policeman.

Glyne A. Thompson, who is a field engineering coordinator with Applicon, was arrested late last month by the Massachusetts State Police and reportedly charged with larceny over $100. The complaint was filed in the Woburn District Court, according to Jackie Armstrong, an attorney for Applicon.

The arrest — which is being billed as the climax to a "high-tech sting" operation — came as the result of a year-long investigation by both the Massachusetts Attorney General's office and First Security Services, Inc., a private investigation firm based in Boston that specializes in corporate crime.

Applicon, a 13-year-old manufacturer of interactive graphics systems, hired the firm to look into thefts that had reportedly been occurring there. Since the case involves a criminal action, neither Applicon nor the attorney general's office would answer questions concerning the upcoming trial. However, Applicon did release an official statement on the event that said the firm "is deeply concerned regarding the problem of theft in the computer industry and intends to fully cooperate with the authorities in the investigation and prosecution of these charges."

Armstrong would not go into details about the type of equipment involved or exactly how it was stolen. However, the system is believed to be a part of the firm's Series 4000 line, a family of systems that are based on Digital Equipment Corp. processors and which fall within the $100,000 to $160,000 price range. The systems were introduced in April and initial deliveries began in June.

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And International Teletex, Too

Western Union Plans First U.S. Teletex Service

By Phil Hirsch
CW Washington Bureau

UPPER SADDLE RIVER, N.J. — Western Union Telegraph Co. was expected to file a tariff last Friday for the first U.S. teletex service. A tariff for an international teletex service was scheduled to be filed at the same time, according to vice-president Thomas Mathai, who is in charge of developing and marketing the telegraph company's office message services.

In both cases, Mathai said, a basic goal will be to deliver documents online at a cost competitive with airmail postage rates. This would mean about 35 cents per page for domestic teletex service and, for service to Europe, about $1 per page.

Both offerings will reportedly have the capability of delivering telex messages to teletex terminals and vice versa. Telex operates at approximately 50 bit/sec, teletex at 2,400 bit/sec, Mathai said.

Four Choices

The new service will conform strictly to international standards adopted in recent years by the Consultative Committee on International Telephone and Telegraph (CCITT), which is made up of most of the world's telecommunications administrations. This means customers of the Western Union teletex service initially will have a choice of four terminal manufacturers — Siemens Corp., Olympia, Facit, Inc. and North American Phillips Corp., said Mathai. However, equipment made by at least 10 other manufacturers is now being tested for compliance with the standards.

Mathai declined to discuss Western Union's proposed rates in detail, but said that four different charges would be levied. They will cover service installation, port usage and transmission. There will also be a per call charge, designed to encourage batching of message traffic at each terminal so that transmission overhead, in the form of call setup time, is minimized.

It will take about 7.5 sec to transmit a page through the network, Mathai explained, but call setup will take 7 sec to 10 sec.

The service installation charge will be less than $120, Mathai indicated. The user will have two options in regard to port charges — unlimited usage or usage on demand. The service will provide point-to-point full-duplex transmission at 2400 bit/sec in each direction, he added.

The estimate that the service will cost a domestic user 35 cents per page is based on a daily volume of five pages to 10 pages, Mathai said.

Agreement With West Germany

So far, Western Union has signed an operating agreement only with West Germany to provide the international version of the new teletex service, but an agreement in principle has been negotiated with Canada, said Mathai, and discussions are under way with Austria, Italy, South Africa and the Scandinavian countries.

The switching and terminal equipment required to support the new service is in New York. It was manufactured by the Siemens Corp. and is compatible with the teletex equipment used in West Germany.

Western Union had been barred by a 1943 amendment to the U.S. Communications Act of 1934 from extending its record communications services overseas.

However, that changed last December when President Reagan signed the Record Carrier Competition Act of 1981, which freed the Federal Communications Commission to allow Western Union to begin offering international services beginning July 28.

Tariffs Cover Overseas Telex

UPPER SADDLE RIVER, N.J. — As a result of the same legislation that enabled Western Union Telegraph Co. to file a tariff last week for the first U.S. teletex service, the company has also filed telex tariffs covering service between the U.S. and more than 100 overseas countries.

These rates are expected to become effective Aug. 10 and, according to Thomas Mathai, company vice-president, will offer savings to Western Union users of "about 20% compared to present telex charges offered by other carriers."

Currently, the rate for 50 bit/sec telex service (Telex I) to Western Europe ranges from $2.40 to $2.50/min. Western Union has proposed a charge of $1.92. The present rate to the UK is $1.90 to $2/min; the telegraph company wants to charge $1.41/min.

In April, Western Union extended its domestic telex service to Hawaii. According to Mathai, this has resulted in a current charge of 34.75 cent/min for telex service compared with the previous $1.15 rate.

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Tenn. Senator Indicted in Honeywell Swindle

By Jim Bartimo
CW Staff

MEMPHIS, Tenn. — A state senator and two former employees of Honeywell, Inc. were indicted by a grand jury here last month on charges of swindling more than $152,000 from Honeywell during the sale of two computers to the state of Tennessee.

Sen. Edgar Hardin Gillock (D-Tenn.), Alan Harvey Bibby and A. Arthur Ayers pleaded not guilty to the charges in U.S. District Court here.

While 10 former Honeywell employees were named in the 30-page indictment as having some role in the conspiracy, only Bibby and Ayers were indicted.

Reached for comment last week, a Honeywell spokesman said that his company "views this indictment with concern."

However, "because this matter is now in the courts, it is Honeywell's policy not to comment further with respect to the substance of the allegation contained in the indictment," the spokesman said.

He noted that Bibby and Ayers "have not been active employees of Honeywell for over a year."

Gillock could not be reached for comment at his state capitol office.

Bogus Billing

According to the indictment, third-party companies — some of which were owned by Honeywell employees — billed Honeywell for bogus services.

Those funds were allegedly used to pay Gillock for his influence with state and county officials.

From January 1975 through March 1976, Honeywell had been trying to sell the state a system for its Department of Employment Security.

Honeywell branch manager Jack Owen and Bibby, regional marketing director, agreed that Gillock would receive payment for influencing the state to purchase the Honeywell equipment, the indictment said.

Owen and Bibby then reportedly instructed a third party to bill Honeywell for services the party did not perform.

The $4,000 in bogus billings comprised the funds in return for which Gillock introduced the Honeywell employees to influential members of the executive and legislative branch of state government, the grand jury found.

In October 1976, the state awarded a contract to Honeywell for the purchase of a $2.5 million computer system by the Department of Employment Security.

"Thereafter, Gillock agreed to assist Honeywell from time to time in getting state business, not revealing that he had received payment of monies which originated out of Honeywell funds, but which had been run through the conduit of a third party," the indictment said.

Further Accusations

Gillock is also accused of influencing Roy Nixon, then mayor of Shelby County, to allocate funds in the county budget for an upgrade to the Honeywell 66/40 mainframe used in the Shelby County Data Center.

This transaction involved another Honeywell employee, Oliver Drew, and Ayers, then director of financial marketing of the Southern region — both of whom answered to Bibby.

In addition to allegedly receiving six monthly payments of $3,000 for his influence during the Shelby County bidding process, Gillock was also said to be the recipient of $130,365.61.

Through a third-party financing business, the Honeywell employees diverted $150,000 that would have gone to Honeywell from the state. Jack Joseph Camarda, who also reported to Bibby, was involved in a bogus discounting of the equipment that allowed the employees to manipulate the funds, the grand jury found.

"Camarda, Ayers and Bibby agreed that funds generated out of this 'discount' would provide the basis for the money going to Gillock. It was further agreed that a portion of the remainder of the proceeds would be given to Bibby and Ayers by Camarda," the indictment said.

Gillock Indicted Previously

MEMPHIS, Tenn. — The 20-count indictment that named Sen. Edgar Hardin Gillock (D-Tenn.) as part of a conspiracy also charged him with tax evasion and other crimes related to the swindling of more than $150,000 from Honeywell, Inc.

This is not the first time Gillock has been indicted, according to U.S. attorney W. Hickman Ewing Jr. "He was indicted on one count of racketeering and five counts of extortion as a state senator," Ewing said. "He made a pretrial motion that no action should be taken on things he did as a state senator. In 1980, [a higher court] ruled that he had no speech and debate privilege."

Gillock was tried on the six charges in October 1980, but the trial ended in a hung jury. He was tried again on the charges in July of 1981, but the second court action was declared a mistrial.

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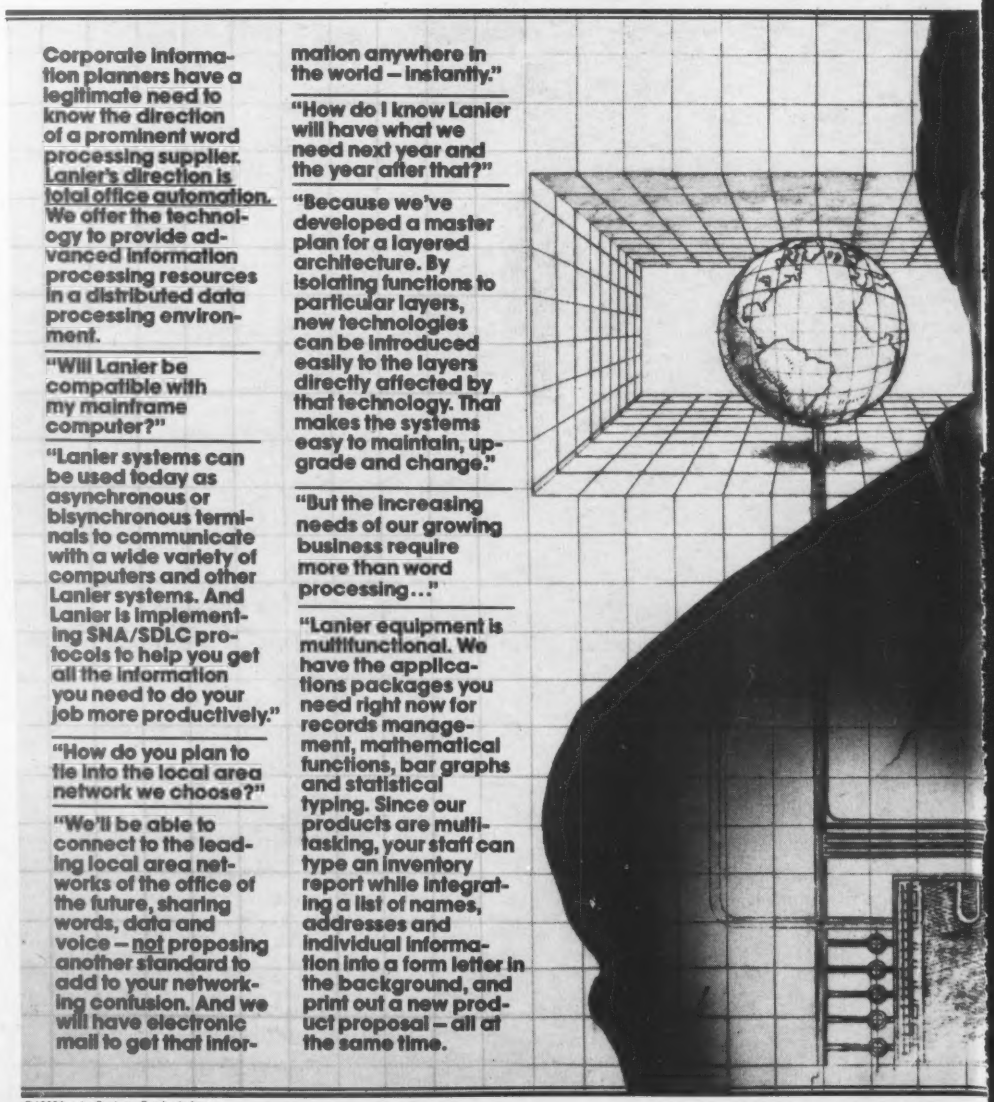

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Spin II Scheduled For Havana in 1984

HAVANA, Cuba — The Rome-based Intergovernmental Bureau for Informatics (IBI) has scheduled its Second Intergovernmental Conference on Strategies and Policies for Informatics (Spin II) here in September 1984.

The 35-nation IBI, devoted to fostering informatics capabilities in developing countries, decided at its general assembly meeting late last month to reschedule Spin II, originally planned for next summer, to allow full participation by the United Nations Educational, Scientific and Cultural Organization, which cosponsored the first Spin meeting in 1978.

The general assembly also re-elected IBI General Director F.A. Bernasconi and adopted a $16.4 million 1983-1984 budget that will provide for international conferences on transborder data flow policies and informatics law.

The first Spin conference, held in Spain, produced a call for a "new world information order" that proposed a more equal international distribution of DP/telecommunications services and established IBI as the preeminent organization for Third World informatics. The U.S. is not a member of IBI but participates in its activities as an observer.

Court Upholds Ruling On Software Tangibility

By Bruce Hoard
CW Staff

MOBILE, Ala. — The Alabama Supreme Court recently upheld a lower court decision affirming the fact that computer software is tangible property that can be stolen without being in a physical form.

In a 5 to 4 ruling, the high court found that Max Coffey, a former employee of Applied Systems, Inc., was liable for $50,000 because he copied that service bureaus' software and used it in a competing business he started [CW, Nov. 24, 1980].

Although no conclusive evidence was presented proving that Coffey had in fact duplicated the eight business-related programs in question, the jury in the original case convicted him on circumstantial evidence.

Expert Testimony

The jury reportedly made its decision on the basis of expert testimony, stating it would be impossible to re-create the programs so precisely in the short period of time that elapsed between the time Coffey left his former job and started his own firm.

According to attorney Gordon Tanner, who represented Applied Systems in the case, Coffey left that company on Dec. 31, 1978 and started his firm the following day. Tanner said that Alabama, unlike some other states, had no statute preventing former employees from copying software when they left.

Several Applied Systems customers switched to Coffey's firm, he added.

Coffey and his lawyers maintained throughout the trial that he originally developed the programs and had recreated rather than copied them. He and his assistant, Robert Sawyer, who was also named in the case, have been allowed to continue their business as long as they do not use the Applied Systems programs.

Herndon Aingle Jr., who defended Coffey, summed up his position by stating, "The contention of the defendants was the software was intangible and they did not take anything." Referring to Coffey and Sawyer's hasty transition from Applied Systems to their own company, he commented: "It was kind of a sloppy thing."

Attorney Daniel T. Brooks of the suburban Washington, D.C., law firm, Computer Law Advisers, noted that there is a key difference between learning about preexisting software and developing it separately. "The developer employee has considerably larger latitude in what he may do with what he develops than the disclosee employee, the guy who learned of it while he was employed," Brooks said.

It is difficult to determine if software written by the developer employee is all, partially, or not at all his in a legal sense, he added.

If a programmer writes a specific program at the behest of a company and then moves to another company and writes a similar — but not identical — program, there is probably no appropriation or misuse of trade secrets, he declared.

Regarding the programs Coffey was found to have stolen, Brooks said that based on the Nov. 24, 1980 *Computerworld* article, "it strains credibility to say he sat down and wrote them again in two days. So what the jury and experts seem to be saying is he didn't carry them across the street in his head. He had a copy, or a listing, or something because he just couldn't do it any other way."

The lawyer said the outcome of the Coffey case does form a precedent for Alabama based on the principal of stare decisis, which means that faced with similar circumstances, another court will reach the same result. "The question is, how similar are the circumstances?" Brooks added.

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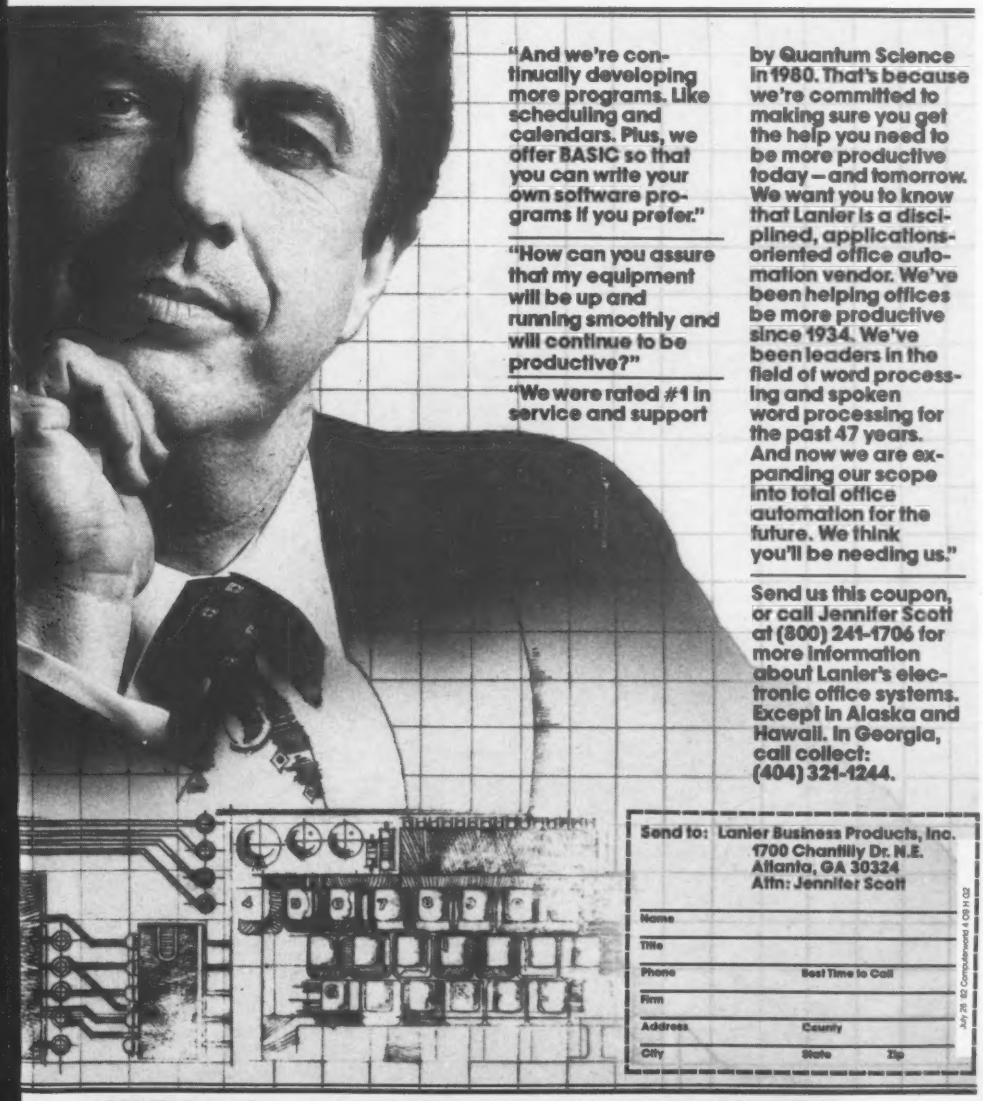

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Telecommunications Said Key Tool for Unions

By Marguerite Zientara
CW Staff

WASHINGTON, D.C. — Organized labor may have finally caught on to the value of using telecommunications technology to get its point of view across to its members and the general public.

"Advances in telecommunications will allow unions to get back to their strongest point — their membership — to become one voice and to make their desires known in November," noted Arthur Shostak, professor and industrial sociologist at Drexel University, speaking at the Fourth General Assembly of the World Future Society here last week.

Fighting a sagging public image is one of the highest priorities of the American Federation of State, County and Municipal Employees (AFSCME), explained public relations director Phil Sparks, who announced the union will start its own satellite-based Labor News Network on July 29.

CW at Future Society

The network will be "a counterpart" to the U.S. Chamber of Commerce's Biznet system, started in April, which offers two-way, real-time links between Washington, D.C., and chamber offices throughout the country, Sparks said.

"We will meet Biznet head-on and will offer access to local radio and TV news stations," Sparks said. "In two-way interviews, our representatives will be able to field questions that affect the labor movement or union membership."

The network will also feature narrow-casting (members only) educational programs on such topics as how to negotiate a union contract, Sparks explained.

As for the diverse International Association of Machinists and Aerospace Workers — which encompasses 350 job occupations — "our ability to communicate is absolutely critical," according to Jerry Rollings, assistant director of public relations.

"We are concerned about Biznet; we believe that power begets power and we must be organized to combat that," Rollings said.

In an attempt to do just that, the union is starting a monthly electronic newsletter and is "looking into starting our own studio operations by the end of the year," he noted.

Rollings pointed out that 20% to 30% of the union's locals will be hooked into the newsletter program in the next few months, hopefully forming a "groundwork for more sophisticated communications in the future."

It is the government that must get involved in helping turn around the blue-collar labor situation in this country, according to Russ Gibbons, public relations director for the United Steel Workers Union.

Waste of Time

"The government today has gone on record as saying that retraining is a waste of time," Gibbons said, noting that 20% of his union's members are unemployed because the steel and auto sectors "are falling apart."

On the other hand, "is it our responsibility to make a communications worker out of a former steel worker?" he asked, noting that only 10% of the retrained get on-line after retraining.

"What we are doing is giving him a year's warning on layoffs and getting him into an educational program that at least offers him a chance for a new career," Gibbons said.

In addition, the Steel Workers Union will transmit by satellite its annual convention proceedings to 15 union halls and retirement centers around the country on September 21 from 7 p.m. to 9 p.m.

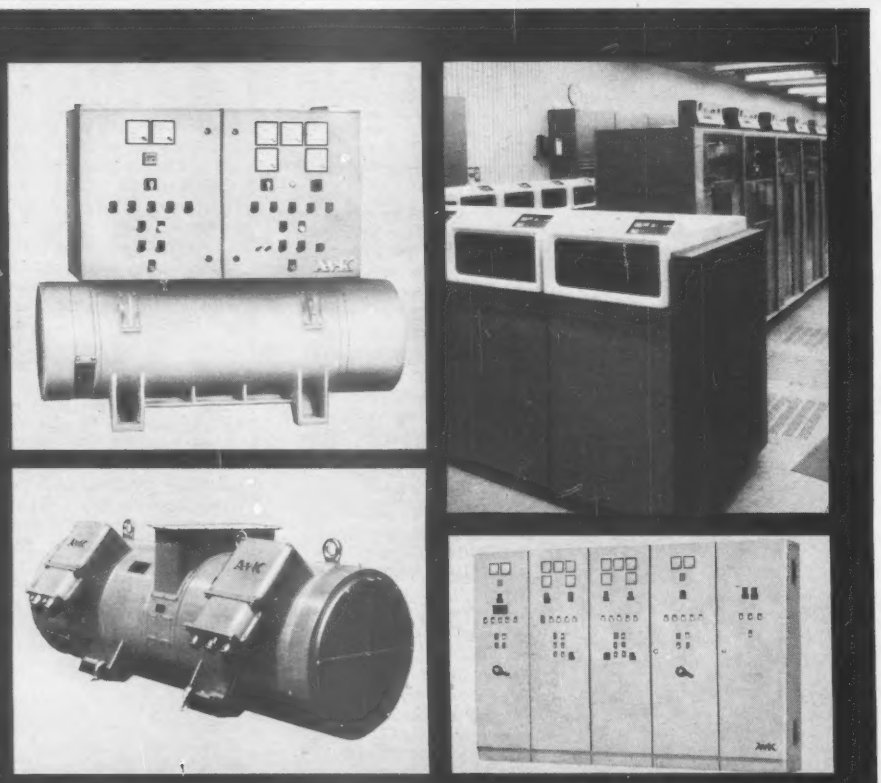
"We want to deliver a powerful political message," Gibbons said, adding, "We're trying to return hope to these communities."

Mensa Meet Set For Oct. 29-31

BOSTON — Dr. Joseph Weizenbaum, professor of computer science at MIT, will be a featured speaker at the Mensa symposium slated to take place here Oct. 29-31. Mensa, the international high I.Q. society, plans to examine the potential effects of high technology on the quality of life through the end of this century at the symposium entitled "Forecasting a Valid Tomorrow: Destination A.D. 2000."

Weizenbaum is known for his work in artificial intelligence and is the author of Eliza, a program for natural language communication between humans and machines. Weizenbaum has also programmed a computer to "practice" psychotherapy.

Weizenbaum will address the subject of "Interpersonal Communication and Language" at the weekend symposium, which is open to the public and costs $150. Further details can be obtained from Mensa headquarters at 1701 W. Third St., Brooklyn, N.Y. 11223.



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To Match Job Market

Need for Job Reclassification Stressed

CW Photo by M. Zientara

W. Clyde Helms Jr.

By Marguerite Zientara
CW Staff

WASHINGTON, D.C. — The conference session entitled "Advancing Communication Technologies and Jobs" at the Fourth General Assembly of the World Future Society should have been held in a larger room.

An overflow crowd listened as W. Clyde Helms Jr., president of Occupational Forecasting, Inc. in Arlington, Va., stressed the need for new classifications of occupations based on the high-technology reality of the current and emerging job market.

"We need to identify, forecast and create new occupations in a real-time, computer-based forecasting and definition network," Helms said.

Cause of Unemployment

Referring to the current "Dictionary of Occupational Titles," which contains 28,000 job titles, Helms charged that the obsolescence of many of the titles listed "is a cause of the high unemployment rate today.

"Unless the titles are changed, the listing will serve as the foundation of high-level unemployment in the next century," he predicted.

Why is this dictionary so important to begin with? In response to that question from the audience, Helms claimed that "we must have a roadmap, a standard terminology so that we can quantify and plan."

Another way of fighting unemployment is for high schools and universities "to educate in the fundamentals" as opposed to specific technologies, according to Daniel Berg, provost at Carnegie-Mellon University.

"By the time someone is taught a specific device," Berg said, "it's obsolete."

Berg also offered some hopeful statistics indicating that by the end of the decade the number of high school graduates will drop 20% from its peak of "a few years ago." Furthermore, Berg noted, in the last 10 years the workforce has increased by 50%, but is expected to go up by less than 20% in the next 10 years.

"So in spite of a high unemployment rate now, that figure will drop," he observed.

Job Survival Key

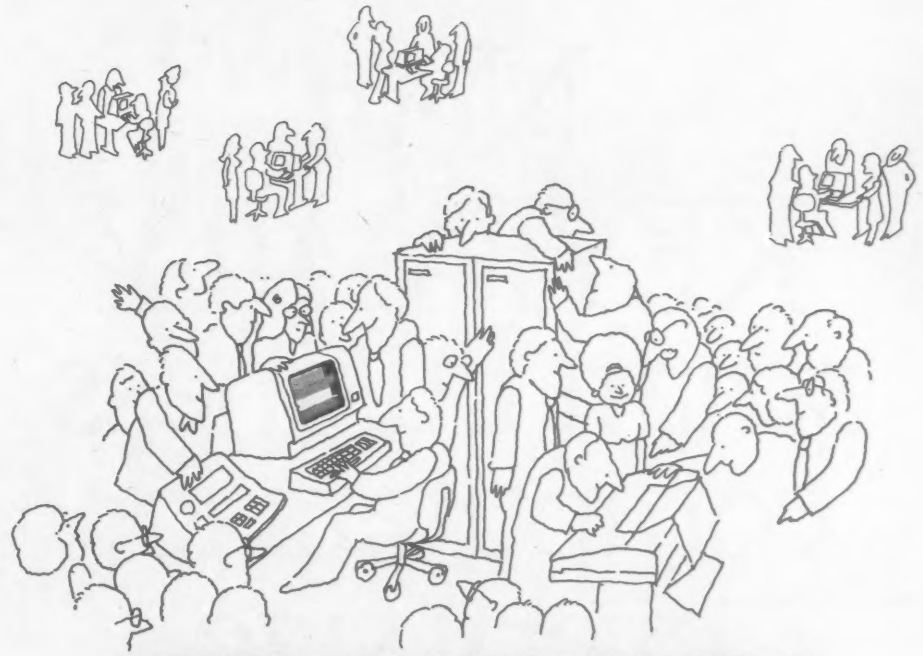
The key to job survival in the coming years will be flexibility, adaptability and "learning as a continuous process," according to Vico Henriques, president of the Computers and Business Equipment Manufacturers Association (Cbema) here.

"Information handling devices are here and are ubiquitous," Henriques said, "but they are not an end in themselves, but rather a means to an end. "Through artificial intelligence, business is changing," he noted. "To know what one will be doing in 20 years, one must assume three to four career switches that may be dictated by the technology.

"To maintain the flexibility to move from occupation to occupation, one should learn to speak, read and write English and basic formulations and develop one's logical aptitudes," Henriques said.

"We will have to be able to communicate ideas among ourselves and to information handling devices," he added.

CW at Future Society



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Message of Social Scientist: Reassess Values of Society Today

By Marguerite Zientara
CW Staff

WASHINGTON D.C. — It is time to ask ourselves what is worth doing with our advanced technology at a time when we have the ability to do almost anything.

That was the message of Willis Harman, senior social scientist for SRI International of Menlo Park, Calif., at the Fourth General Assembly of the World Future Society held here last week.

CW at Future Society

"The technology itself is not the goal, but rather a tool to help us do what we want to do," Harman said. "Now that we've successfully asked ourselves 'how to?' we must ask ourselves 'what for?' "

Citing the growing number of people involved in the information industry, Harman asked, "How did it happen that information activities play such a large role in the economy?"

CW Photo by M. Zientara
Willis Harman

Answering the question, Harman said that "between the lines — and no one says this — the reason is that they can't think of anything else they might be doing."

The emphasis now must be placed on values and meaning in a transformational kind of society, Harman said. "We must reassess and re-evaluate what we're doing."

Harman focused on two "obsolete concepts that have been taken for granted for a long time, and which will be seen by many as impractical and crazy."

Besides calling for the abolition of war as a means of solving difficulties, Harman questioned the wisdom of having economic interests as the central interests of society.

"It is only recently that we've begun identifying ourselves by our jobs, and only in the last 30 years have we considered ourselves consumers," Harman noted. "Is this the future we want?" he asked.

"The working population gets shivers thinking of robots and artificial intelligence," he noted, "and the reality is that anything a human can be trained to do, a robot can be trained to do faster, better and cheaper."

Harman posed the question: "Does economic logic make sense as the basis for societal decisions?"

If it were not for armaments and the "frenetic exchange of information, how would we keep the economy going?" he queried.

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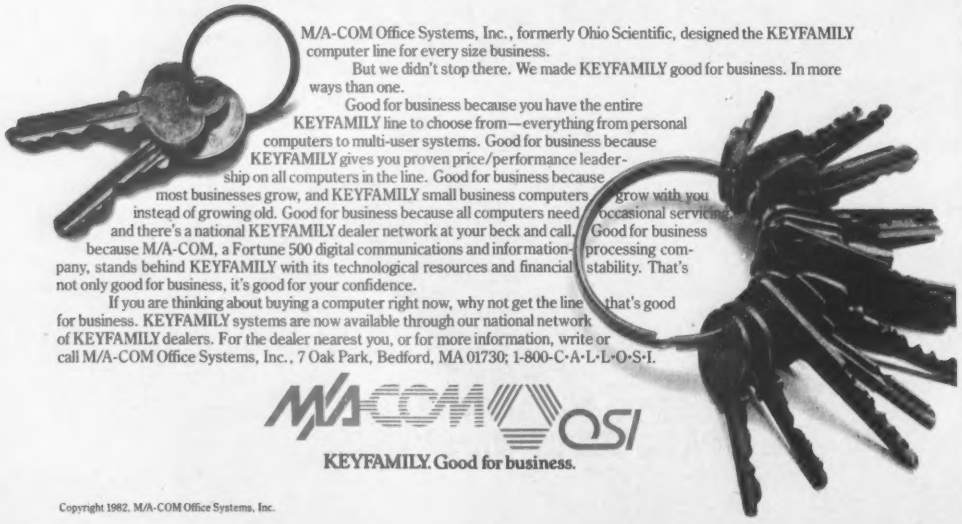

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U.S. Said 'Missing the Boat' on Technology Policy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The U.S. may be "missing the boat" by failing to develop a coherent policy for adapting information technology to society and for developing markets for U.S. companies overseas, especially in developing countries, according to the chairman of a congressional science and technology subcommittee.

Chairing a July 15 hearing on technology transfer to lesser developed countries, Rep. Albert Gore Jr. (D-Tenn.) sought opinions on whether the U.S. should establish a counterpart to the French World Center for Microprocessing and Human Resources.

The center's director, Jean-Jacques Servan-Schreiber, recently urged Gore's Investigations and Oversight Subcommittee and the Science, Research and Technology Subcommittee to support U.S. participation in the organization's work [CW, May 24].

DP Policies

The recently established French center seeks to develop policies for applying DP/telecommunications technology to worldwide economic and developmental problems.

U.S. witnesses at the July 15 hearing of the two science and technology panels suggested the U.S. should indeed set up a similar organization or at the very least participate in the French undertaking and in the work of a similar organization planned by the Japanese.

Rep. Doug Walgren (D-Pa.), chairman of the Science, Technology and Research Subcommittee, said that compared to other information technology-providing countries, "current U.S. policies and programs to assist in resolving conflicts and reducing barriers are not adequate to meet the challenges posed by the emerging communication and information technologies."

He and Gore said Congress needs to define the proper U.S. role in spreading microcomputer technology to other nations, to identify, in Gore's words, "ways in which computer technology can be adapted to the nonindustrialized nations and [to] identify what the government and private sector are doing to develop this market."

Ron Boring, Apple, Inc.'s marketing director for developing countries, told the subcommittees "it's unrealistic to expect private enterprise to do what it's not set up to do . . . These tasks are the tasks of the international agencies and the nations themselves."

But, Boring continued, "symbols are important." The French center, he said, "is a very nifty symbol, so I'm all for it, but I don't think we need one of our own."

He added it would not cost the U.S. very much to participate in the French center's work. He also said that the U.S. should have an agency to coordinate domestic policy for these issues.

Dr. Alan Kay, Atari, Inc. vice-president and chief scientist, concurred that the U.S. could in any event set up a "satellite center" to participate in the French work, a suggestion put forward by Servan-Schreiber when he testified here.

Noting the international composition of the center's staff and the worldwide scope of its mandate, Servan-Schreiber said national satellites to the Paris-based organization would facilitate international cooperation in these efforts.

U.S. Programs

Representatives of the U.S. State Department Office of Communications and the Agency for International Development outlined for the subcommittees some of the current U.S. programs that support information technology development in developing nations. The programs, however, are sporadic, uncoordinated and mostly small scale, the representatives said.

Gore and Walgren indicated their subcommittees will continue their inquiry into the desirability and feasibility of developing a central agency for technology transfer to developing countries and for developing U.S. information policies.

Rep. George E. Brown Jr. (D-Calif.) reminded the hearing of legislation he has proposed to establish a federal institute for information policy and research [CW, Jan. 12, June 22, 1981].

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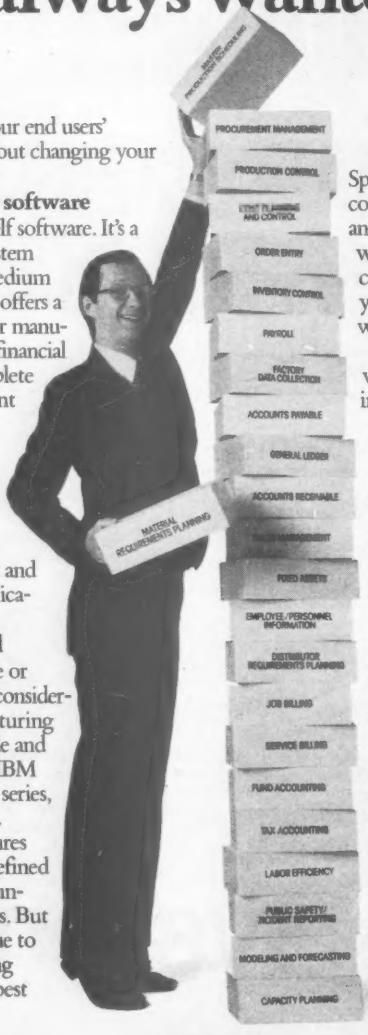

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HP Users Group Meet Slated for Aug. 30

LONG BEACH, Calif. — The Hewlett-Packard HP 1000 International Users Group will hold its third international conference aboard the RMS Queen Mary here Aug. 30 to Sept. 1.

The theme is "50 Years of Computational Progress." The conference will feature international technical speakers and an exhibit area displaying up-to-date hardware and software for the HP 1000.

Some 60 technical papers and tutorial sessions are on the program.

The registration fee for members is $250; nonmembers will be charged $300. More information is available from Ms. Leslie Nicholson at the HP 1000 Users Group Office, Suite 205, 289 S. San Antonio Road, Los Altos, Calif. 94022.

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Litigation Support System Aids Legal Firm

By Brad Schultz
CW New York Bureau

RICHMOND, Va. — An automated litigation support system (ALSS) can give law firms a big edge in the courtroom, but a rule of law allows attorneys to employ ALSS without detailing how the systems work or what they can do.

So said attorney William H. King Jr. in a recent interview. King's firm, the Richmond-based McGuire, Woods & Battle, uses its ALSS to defend manufacturers sued simultaneously by many consumers, often in a number of courts. These are product liability cases, usually connected with disasters.

McGuire, Woods & Battle mostly developed its ALSS — dubbed the Nomothetic system — in-house, King said. The idea was to have computers track the status of individual cases, their relationships with other cases, the location and contents of pertinent documents, costs of litigation, dollars at stake and the disposition of relevant law. But the firm is negotiating deals to license the Nomothetic software to three other law firms.

Work Product Privilege

Throughout the U.S., a rule of law known as "the attorney's work product privilege" allows lawyers to keep mum about their strategy in a case or about specific methods of preparation, King explained. Rules of law need not be spelled out in an act of legislation or mentioned in rulings by higher courts, but attorneys generally feel obliged to obey them, he observed.

The attorney's work product privilege, King indicated, implies that attorneys have a right to privacy about information on the computer technology they use to prepare for a case. But information bearing on the case per se — about the activities and background of persons and organizations named in an indictment or complaint — is a different matter.

Federal rules of civil procedure compel attorneys to furnish what they have of that kind of information to opposing counsel, should the latter ask for it during the pretrial stage called "discovery." That kind of information is being stored more and more in computers, to the extent that law firms are increasingly relying upon DP specialists for interpretation of the computer output acquired during discovery and for help in interviewing witnesses [CW, May 17].

Examples of the kinds of computer-stored information commonly exchanged by opposing attorneys during discovery include invoices, inventory records, product test data, monitoring data and other records.

When a disaster occurs, a set of information may become relevant in different ways to many plaintiffs and defendants in suits filed by the victims, King pointed out. A primary application of his firm's Nomothetic system is keeping such information available, in appropriate forms, to whoever is authorized to have it.

The people who sue McGuire, Woods & Battle clients are "probably not" able to engage law firms that also will have computerized productivity boosters like the Nomothetic system, King said.

He indicated that the attorney's work product privilege makes it unlikely that a plaintiff's lawyer, with scant access to computing power, could help his client by arguing that a uniquely sophisticated computer arsenal, employed in an exceedingly complex case by the defense counsel, posed an unfair advantage.

Most law firms cannot afford, or at least could not cost-justify, development of an ALSS, the Viriginia attorney suggested.

Further, the law firm must be willing to make successful implementation a high-priority objective. The law firm will need to retain technical consultants who have some understanding of legal practice, as well as to develop technical expertise among its own personnel, ranging from attorneys to clerical workers, King advised.

Major software houses seem ill-equipped to develop and market ALSS because they tend to lack systems programming staffs with the necessary insight into legal practice, King maintained.

Charp Elected Afips President

ARLINGTON, Va. — Dr. Sylvia Charp has been elected president of the American Federation of Information Processing Societies, Inc. (Afips) by the board of directors.

Charp is the director of instructional systems for the School District of Philadelphia. She has been active in Afips for several years, having served as vice-president, chairwoman of both the National Computer Conference and the Afips conference board and as a member on many committees.

The board also announced the election of Dr. Stephen Yau, chairman and professor in the Department of Electrical Engineering at Northwestern University, as vice-president of Afips. Arthur Lumb and Walter Johnson were re-elected secretary and treasurer, respectively.

The new officers began their one-year terms July 1.

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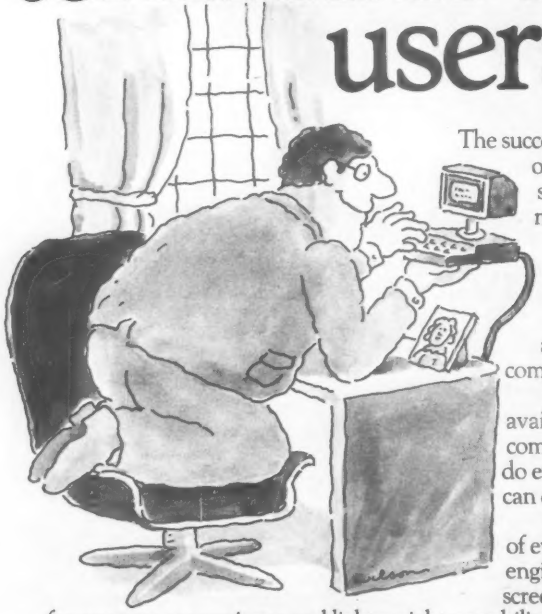

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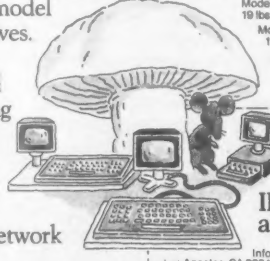

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AT&T's Third Try

Carriers to Fight Hike in Local-Loop Charges

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Specialized carriers have begun gearing up for another fight with AT&T, this one involving recently proposed increases in dedicated local-loop and related facility charges.

If the new rates are implemented, the carriers say they will have to increase charges to private-line customers.

According to a spokesman for Southern Pacific Communications Co. (SPCC), the proposed tariff would add about $1 million per month to the amount his company is now paying Bell operating companies for local distribution. "There's a good chance [that] our private-line rates in some areas would have to be raised above those charged by AT&T under its MPL [Multi-Schedule Private Line] tariff," he added.

Meanwhile, the cost of providing SPCC's Sprint service, a dial-up offering that utilizes nondedicated local-exchange facilities to connect the end user with intercity transmission channels, would increase 5% to 6%, the spokesman said.

Release Supports Estimates

A recent AT&T press release issued supported this estimate at least partially when it pointed out that the newly filed tariff would "increase rates for [other common carrier] local-distribution facilities some 95% to about $55, from a present average of about $28/mo." But AT&T quickly added the new tariff, scheduled to become effective Jan. 5, is meant to replace rates that were set in 1974.

According to AT&T Assistant Vice-President D. J. Culkin, the present rates "have resulted in an ever-increasing revenue shortfall, which is being borne presently by the [Bell operating companies]. Today, that shortfall is so great that the present rates recover only about half of the costs incurred by the [Bell companies] in providing these facilities to the [other common carriers]. In absolute dollars, the annual shortfall is in excess of $130 million."

The new filing represents AT&T's third attempt to increase charges for the local loops leased to the specialized carriers. First came a tariff known officially as Bell Systems Operating Co. 6 (BSOC 6), filed in December 1978, which consolidated the charges levied by the 19 Bell operating companies into a single proposed "fully cost-supported, nationwide averaged rate" to replace those set in 1974.

While BSOC 6 was pending, the Federal Communications Commission (FCC) began investigating the need to restructure all of AT&T's private-lines rates. The commission suggested that significant rate structure revisions would be needed to integrate BSOC 6 with the private-line rates levied directly on end users, a major goal of the investigation.

BSOC 6 was withdrawn to "await expeditious resolution" of the FCC inquiry. However, that proceeding is still underway.

In 1980 and 1981, AT&T filed a series of rate increases covering its interstate services, and the Bell operating companies filed corresponding increases for their local-facility tariffs. Although these rate hikes subsequently went into effect, the other common carriers went to court and last year won a rollback.

The court's decision did not deal with the merits of the increase. Rather, it addressed AT&T's failure to comply with an agreement establishing the 1974 rates, which the phone company and the specialized carriers negotiated late that year and subsequently submitted to the FCC (which approved it in 1975). Generally referred to as the Docket 20099 Settlement Agreement, this pact required AT&T to allow six months between the filing of a new other common carrier tariff and the tariff's effective date. Concerning the 1980 and 1981 increases, the court said, this was not done.

However, this time AT&T is not making the same mistake. Consistent with the requirements of the settlement agreement, the phone company said in its latest filing that "the tariff revisions are being filed so as to allow a maximum of six months before they become effective."

'V-Series Report' Out for End Users

WOODBURY, N.Y. — Remark Datacom, Inc. has announced its V-Series Report on international data communications standards. The V-Series of standards are analogous to the AEIA standards, the vendor said.

The report was designed to help the end user in choosing data communications equipment and services. It outlines the standards that apply to DP equipment and modems when used on the telephone networks in Europe. It points out where standards or practices in the U.S. are different, a spokesman said.

The report is available for $34 from Remark Datacom, 4 Sycamore Drive, Woodbury, N.Y. 11797.

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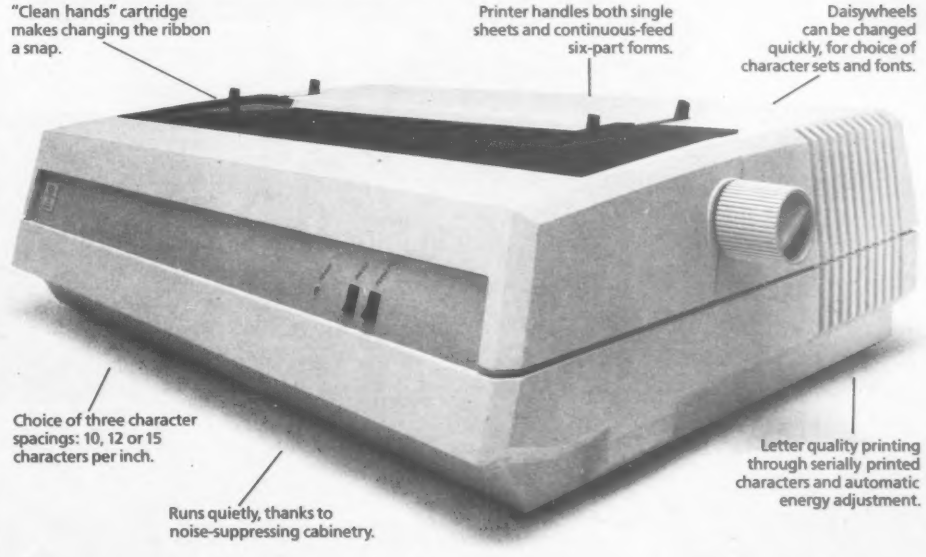

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To Determine What's Acceptable

Programmer 'Performance Contracts' Urged

By Brad Schultz
CW New York Bureau

BETHESDA, Md. — A recently published white paper on DP productivity says programmers should negotiate contracts with their managers that stipulate what is acceptable job performance.

Released by Gary Slaughter Corp. here, the 26-page document advocates a team approach to productivity (TAP team) in the DP department, blames productivity slumps on poor communication among supervisors and subordinates and asserts that, in efforts to turn slumps around, too much emphasis has been placed on hardware and software aspects of DP, while too little has been placed on human aspects.

Devised as a reference for a three-day course that is offered on TAP, Slaughter's white paper explains that a DP charter results from a contract negotiated between DP management and a company's top management, with input from managers of user departments. The charter illuminates DP's principle mission, reporting relationships, how DP is financed, roles and responsibilities of those concerned and methods for measuring performance and activity.

As Slaughter sees it, the same parties to the contract establishing the DP charter should huddle on a set of DP policies. "Policies ... reflect a basic commitment to DP as a company function," the white paper declares, and they specify an approach to implementing the DP charter. Policies are succinct statements, none of which needs to exceed one typewritten page in length.

The following is a sample DP policy:

"The DP organization will charge back to user departments all costs incurred in the development and maintenance of computer-based systems."

Areas of concern addressed by DP policies include:

- Definition of user requirements for new systems.
- Priorities for use of systems development resources.
- The DP department's role in acquisition of stand-alone hardware or software systems for end users.
- Quality assurance.
- Data security.
- Management of the DP department's human resources.
- Control and allocation of DP costs.

The white paper recommends a five-step method for implementing a TAP team, a group of professionals that hammer out a DP charter.

The initial step is composing the first draft of a charter and set of policies for the DP department. Next comes a meeting of the TAP team and the company's chief executive in which a second draft is formed. The third step is a meeting of all DP managers and end-user department managers. This step entails a training session to familiarize the meeting's attendees with preliminary drafts of the charter and policies.

If deemed necessary, the meeting organized in the third step generates another final draft of the charter and policies. In the fourth step, each user manager and DP manager has his own individual meeting to cement acceptance of the final draft. Finally, in the fifth step, the final draft is formally approved by top management and distributed to everyone affected by it.

Copies of the white paper are free from Gary Slaughter, 4810 Montgomery Lane, Bethesda, Md. 20014.

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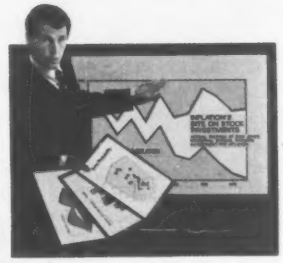

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Calendar

Aug. 9-13, East Stroudsburg, Pa. — **Computers in Education Workshops.** Contact: Dr. Terry C. Giffel, Department of Education, Communications and Technology, East Stroudsburg State College, East Stroudsburg, Pa. 18301.

Aug. 9-13, Denver — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, DP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

Aug. 9-13, Ann Arbor, Mich. — **Contemporary Data Communication Network: Planning Analysis & Design.** Contact: The University of Michigan, College of Engineering, Continuing Engineering Education, 300 Chrysler Center, N. Campus, Ann Arbor, Mich. 48109.

Aug. 9-13, Sunnyvale, Calif. — **Establishing Computer Configuration Capacity.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

Aug. 9-13, New York — **CICS Command Level Programming.** Contact: Chubb Institute Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Aug. 9-13, Cambridge, Mass. — **Key Aspects of Information System Technologies: Data Base Systems, Telecommunications and Performance Evaluation.** Contact: The Office of the Summer Session, Room E19-356, MIT, Cambridge, Mass. 02139.

Aug. 10-11, New York — **Future of the Communications Industry.** Contact: The Yankee Group, 89 Broad St., Boston, Mass. 02110.

Aug. 10-11, Cary, N.C. — **Introduction to Data Processing Using SAS.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

Aug. 10-12, Baltimore — **Data Communications: Components, Systems and Networks.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 10-13, Cherry Hill, N.J. — **MVS Diagnostic Techniques.** Contact: Amdahl Corp., 1211 Ave. of the Americas, New York, N.Y. 10036.

Aug. 11-13, Minneapolis — **Structured Testing.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 11-13, Chicago — **The 10th Annual Speakeasy Conference.** Contact: Speakeasy Computing Corp., 222 W. Adams St., Chicago, Ill. 60606.

Aug. 11-13, Denver — **The 4th Annual Satellite Communications Users Conference.** Contact: Satellite Communications Magazine, 6430 S. Yosemite St., Englewood, Colo. 80111.

Aug. 12-13, Boston — **Selecting a Local Network.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

Aug. 12-13, Montreal — **The X.25 Packet Network Protocol Seminar.** Contact: Data Communications, Special Project Center, McGraw-Hill Publications Co., 42nd Floor, 1221 Ave. of the Americas, New York, N.Y. 10020.

Aug. 12-13, Indianapolis — **Fundamentals of Data Processing for Non-Data-Processing Executives.** Contact: Battelle, 4000 N.E. 41st St., P.O. Box C-5395, Seattle, Wash. 98105.

Aug. 12-13, Boston — **Ada: The Language and Environment.** Contact: Education Foundation of the Data Processing Management Association, P.O. Box 91295, Department Ada, Los Angeles, Calif. 90009.

Aug. 14-15, Chicago — **CICS Command Level Intensive.** Contact: Sys-Ed, One Park Ave., New York, N.Y. 10016.

Aug. 15-19, Chicago — **Microdata International Users Group.** Contact: Microdata Corp., 4300-L Lincoln Ave., Rolling Meadows, Ill. 60008.

Aug. 15-19, San Diego — **Second International Computer Engineering Conference and Exhibition.** Contact: The American Society of Mechanical Engineers, 345 E. 47th St., New York, N.Y. 10017.

Aug. 16-17, Philadelphia — **Unix: Concepts, Functions, Applications.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Aug. 16-17, Boston — **Future Trends in Broadband Networks: Fiber Optics, Satellites and Cable.** Contact: Phillips Publishing, Suite 1200N, 7315 Wisconsin Ave., Bethesda, Md. 20814.

Aug. 16-17, Athens, Ohio — **Computer Packages and Multivariate Analyses.** Contact: Computer Packages and Multivariate Analyses Workshop, Memorial Auditorium, Ohio University, Athens, Ohio 45701.

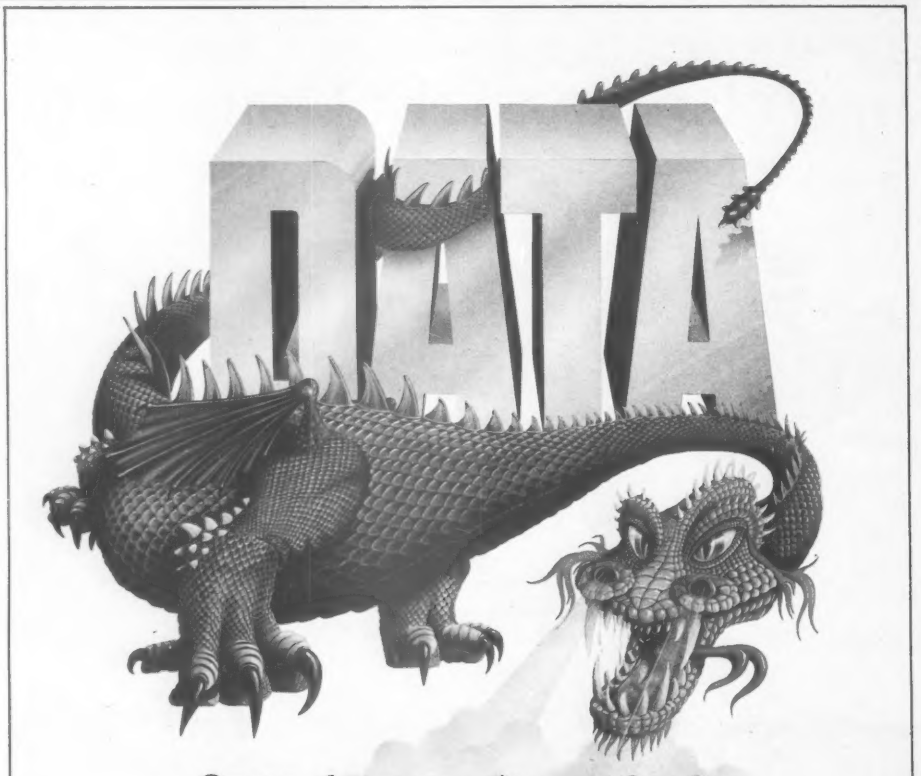
Aug. 16-17, New York — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511. Also being held Aug. 17-18 in Arlington, Va.

Aug. 16-17, Alexandria, Va. — **Software V & V.** Contact: Anchor, Software Management, P.O. Box 11208, Alexandria, Va. 22312.

Aug. 16-17, Washington, D.C. — **How to Manage Data and Information as a Resource.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

Aug. 16-17, Washington, D.C. — **Two Word Processing Courses Emphasizing Hands-On Instruction.** Contact: The Holman Corp., 1346 Connecticut Ave. N.W., Washington, D.C. 20036.

Aug. 16-20, Minneapolis — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, DP Auditors Foundation, 375 S. Schmale Road, Carol Stream, Ill. 60187.



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LONG-RANGE MIS PLANNING

BY LARRY LONG

THERE IS NO MAGICAL APPROACH to strategic MIS planning that can guarantee all pieces of the plan will automatically fall into place. The MIS planning function encompasses virtually every functional area within a corporation and requires cooperation and coordination of representatives from each area.

Unless a certain amount of rigor is associated with the planning process, corporate, user and information services personnel have a tendency to take shortcuts. This is true in any planning project. Therefore, it is important to use a methodology that clearly outlines duties and responsibilities.

The methodology should also provide a vehicle for those affected by the plan (user managers, corporate executives and information services personnel) to have continuous input and some veto power over aspects of the plan that will affect them.

This article will describe one approach to preparing, developing and implementing a long-range MIS plan.

PART 2: Three-Phase Methodology.

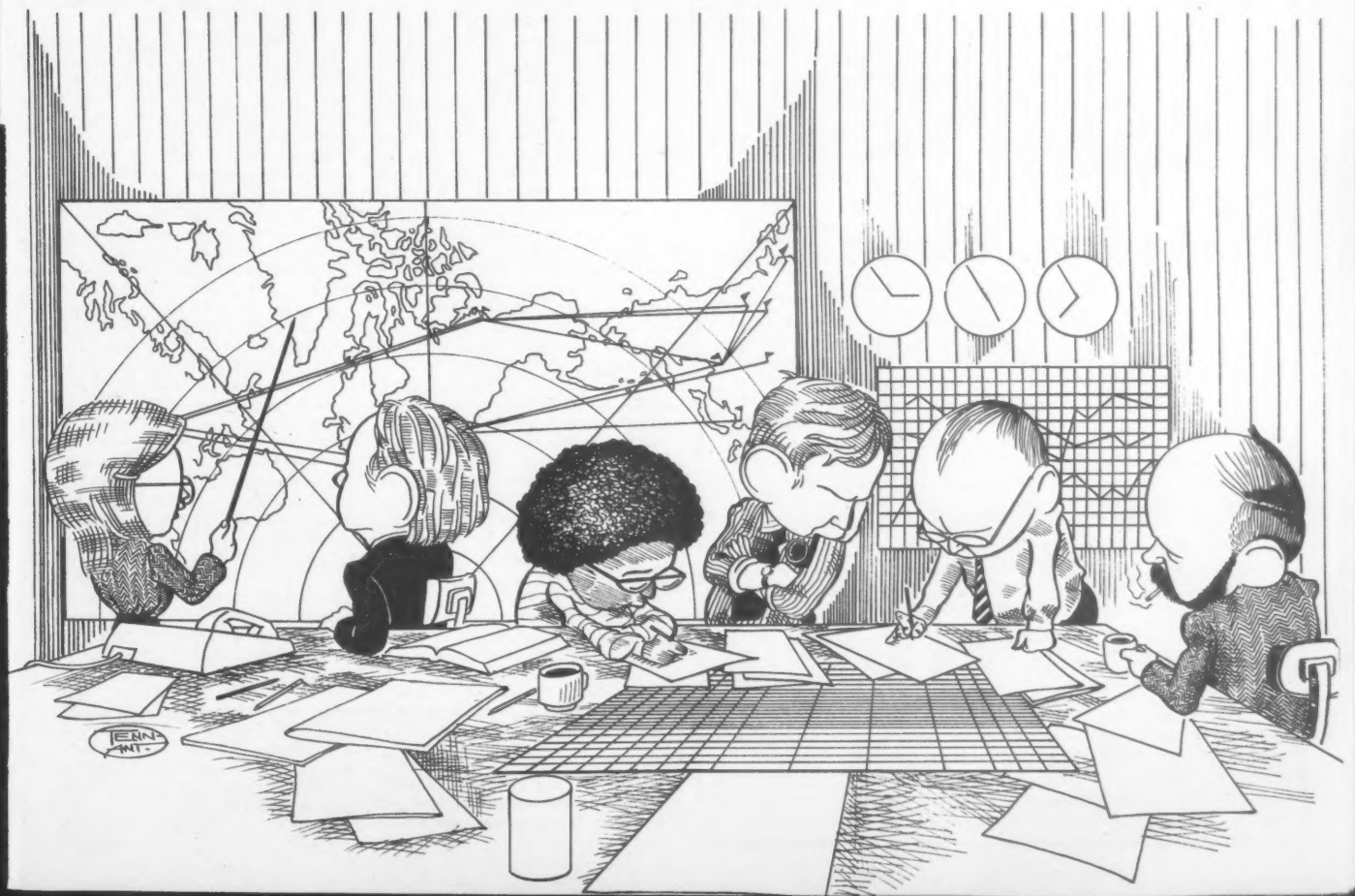
This second part of a three-part series offers a three-phase planning methodology that is supported in theory and concept in Part 1 (last week) and with specific planning strategies in Part 3 (next week). The methodology applies equally to large and small MIS functions, centralized and distributed shops.

This three-part series is based on Larry Long's most recent book, Design and Strategy for Corporate Information Services: MIS Long-Range Planning, *Prentice-Hall, Inc. 1982. The book, which costs $25, may be ordered through Steven T. Landis, Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632.*

Phase 1. Preparation

Before an activity as encompassing as an MIS long-range plan can be initiated, certain preparations must be made regarding attitudes, design, organization, education and familiarization. If any of these considerations are neglected, the plan can become unnecessarily difficult to develop.

• **Recognition and commitment.** Those charged with responsibility for the plan must assess whether user, information services and corporate managers understand and accept the MIS planning function as critical to meeting corporate objectives. Inevitably, the planning project will require a significant commitment from personnel throughout the company. If managers and executives do not comprehend the scope of the MIS plan-



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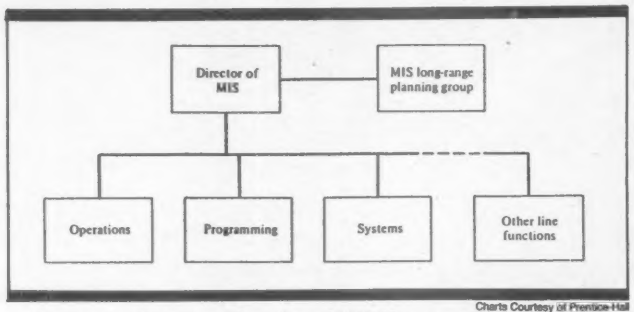

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Figure 1. Organizational Location of MIS Planner or Planning Group

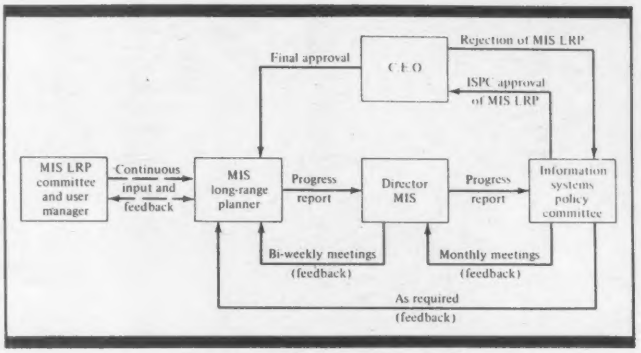


Figure 2. Feedback and Approval

ning function, those responsible (usually the high-level MIS steering committee and the director of information services) should provide the necessary information to raise MIS planning awareness. Less than complete acceptance will result in less than full cooperation.

• **Organizing for information services planning.** Staffing for the project depends on the organization's size. In small computer centers (less than 25 professional personnel in information services), the director of information services is usually the person who carries out the planning activities. Computer centers with professional staffs of more than 25 people can easily justify a full-time coordinator of MIS planning. Large computing centers with more than 175 professionals can justify a planning group.

The following positions and committees are integrated into the methodology we will describe:

MIS director: Has responsibility for all information services functions.

MIS long-range planner (individual or group): Compiles the plan. The planner or planning group is most effective in a staff position that reports to the director of information services (see Figure 1).

MIS managers: Operational area managers within information services.

Chief executive officer, corporate officers and user managers. MIS long-range planning committee: A standing committee of information services and user managers formed to provide continuous input to the MIS planning process.

High-level information services steering committee: A committee whose membership is taken from top management (vice-president and up), charged with setting policy and priorities for information services. For the purpose of describing this methodology, this committee is arbitrarily named the information systems policy committee, or ISPC.

The organizational structure of these positions and committees would be tailored to the needs and circumstances of the company. Very few companies can embark on an MIS long-range plan without some restructuring of personnel.

• **Feedback and approval.** MIS planning is an iterative process that requires a formal, ongoing feedback mechanism and well-defined authority for approval, *both intermediate and final.* Although information services and corporate organizational structures have well-defined lines of authority, approval authority for MIS planning is often vague. The information systems policy committee should define a formal approval process before planning commences.

One approach to formalizing the feedback and approval authority process is shown in Figure 2, which illustrates the ongoing interaction between principals in the MIS long-range planning process.

• **Staff familiarization.** Those involved with MIS long-range planning should familiarize themselves with any aspects of corporate operation they do not already know about. This could include the product line, organizational structure, various functional areas, geography of facilities and so on.

Phase 2. Development Process

During Phase 2 a strategic plan for information services is compiled and approved. A suggested approach to development is illustrated in the work-flow diagram of Figure 3, which shows the sequence and relationship of major activities in the MIS planning process.

Each major activity is identified by a number placed outside the upper left corner of the "activity block" or in parentheses above a group of related blocks. These numbers do not necessarily depict the order in which the activities are executed. They serve as a cross-reference to the following detailed activity descriptions. The descriptions expand on personnel involved, responsibilities, criteria for decisions, considerations, approaches to a solution and sources of information.

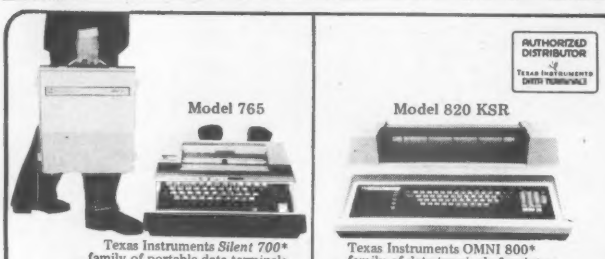
Note: The 14 Phase 2 activities described below and in Figure 3 are composites of 43 detailed activity descriptions in the book upon which this series is based. Not included in this series are the work-flow diagrams for Phase 1 and Phase 3.

1. Planning Issues. Prior to beginning the MIS planning process, certain planning issues should be resolved, considered or at least identified as having some effect on the process.

• *Centralized or decentralized.* Decentralized thinking has been promoted because of the growing emphasis on distributed data processing. In decentralized environments, certain aspects of the plan can be accomplished at the remote sites. This type of planning requires more direct involvement of user managers. When the planning function is decentralized, remote planners will approach planning as a secondary function. Therefore, decentralized planning should be closely coordinated at a central site.

• *Top down or bottom up.* The MIS planning process is most effective when the planning team takes advantage of both the top-down and bottom-up methods of information gathering. In top-down planning, the input to the plan is a perspective on overall corporate goals, objectives and trends. In the bottom-up method, information is gathered at the clerical and operational levels. From this vantage point, the input tends to reflect the "real environment" with all of its embedded constraints.

• *Planning horizon.* As a rule of



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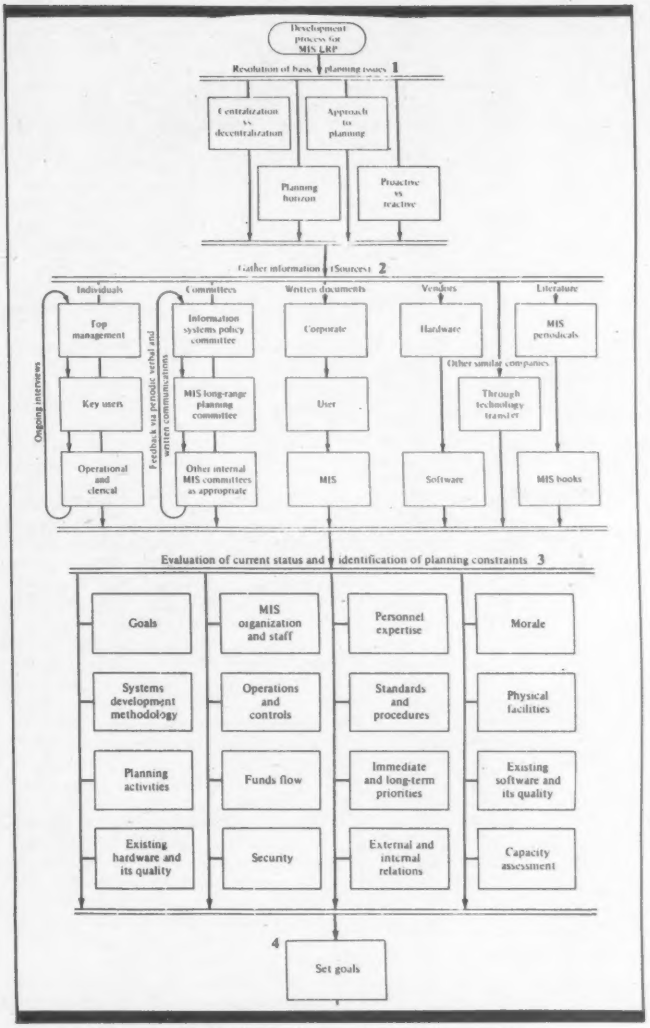

Figure 3. Work-Flow Diagram for Development Process

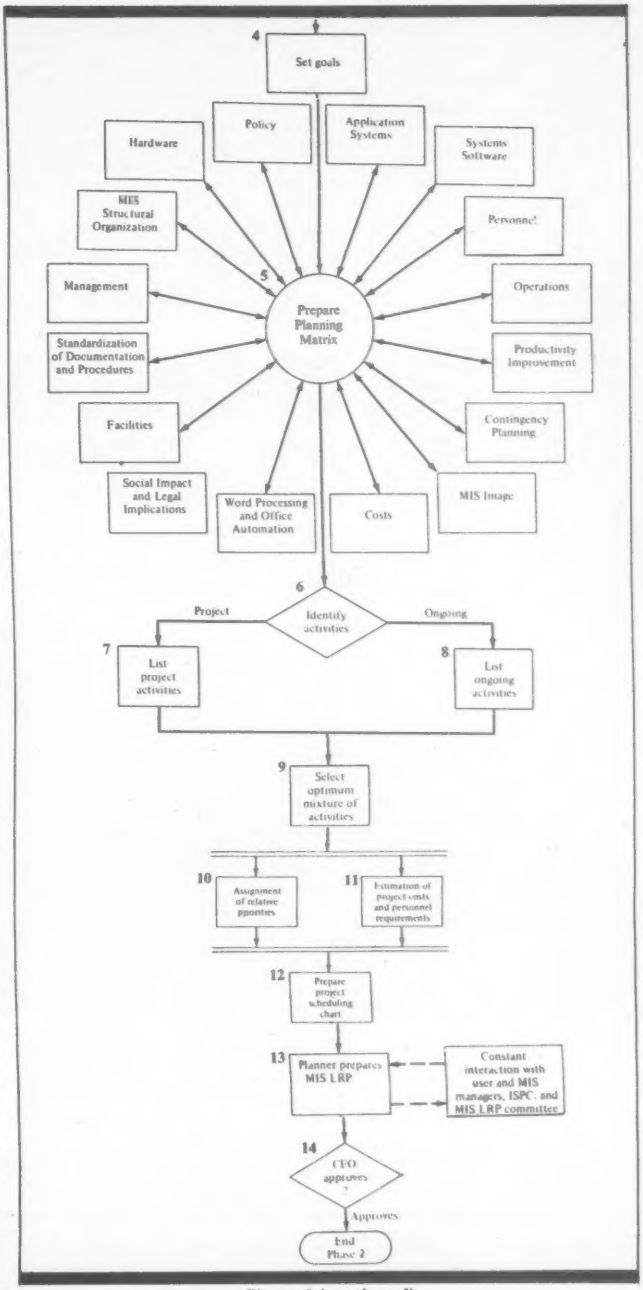

Figure 3 (continued)

thumb, the minimum planning horizon would be no less than one year with a maximum of from three to 10 years. There is no typical horizon, but the average is between three and five years.

• *Proactive or reactive.* There are advantages to both reactive and proactive information services. Specifically, if a computer center reacts to situations, monies for education, systems development and the like are funneled directly into approved projects.

On the other hand, so-called proactive computer centers must commit funds to such activities as professional education and hardware upgrades in anticipation of future corporate information services needs. The proactive environment is generally more responsive to user requirements.

2. Information Gathering. Those charged with the responsibility for MIS planning have six primary sources from which to gather information: individuals, committees, documents, vendors, similar companies and the literature.

• *Individuals.* People at various levels of the corporation who are directly or indirectly involved with information services are interviewed on an ongoing basis. These people can provide feedback to the planning process by suggesting alternatives, offering compromises and/or discussing tradeoffs.

• *Committees.* The information systems policy committee, the MIS long-range planning committee and certain other internal information services committees (for example, the hardware and software acquisition committee) have important roles in the MIS planning function. For example, the ISPC can offer input on applications systems requirements, systems integration and priorities. The ISPC ultimately renders approval for implementing the plan. The MIS long-range planning committee, comprised of user and information services managers, is the primary source of ideas and serves as a sounding board for alternative planning strategies.

• *Documents.* The typical information services department has numerous written documents that can be helpful in planning: approved service requests, previous MIS long-range plans, internal directives and memorandums, appropriate information systems documentation (including user manuals), information services department organizational charts, internal and external auditors' reports, postimplementation reviews and periodic system evaluations.

Similar printed material is available at the corporate level and in the functional areas. Of particular importance at the corporate level are the corporate long-range plan, internal policy statements and the corporate organizational chart.

In the functional areas, user managers should be asked for any available printed matter that might be helpful in planning: an organizational chart, a statement of goals and objectives,

an internal procedures manual.

• *Vendors.* Hardware and software vendors are another valuable source of information. Most marketing representatives are more than happy to provide input to the planning process. Vendors can provide important information on their products and will usually work within the structure of the organization to propose what they feel to be feasible alternative solutions.

• *Similar companies.* Other computing centers in similar companies represent another source of information and insights on planning, pitfalls and the potential for technology transfer.

• *Literature.* The volatile and growing field of computers and information systems has spawned many excellent periodicals that can provide articles to spur the planners' imagination.

3. Evaluation Stage. At this point, the status of the information services function is evaluated and the constraints that affect the scope and direction of the planning effort are identified.

• *Evaluation of current status.* The purpose of evaluating the current status of the information services function is to provide the planning team with a definition, or "benchmark," of where the information services and functional area departments stand with respect to each area of information services planning. Compiling the MIS long-range plan is difficult enough when you know where you stand. If you don't have this knowledge, an effective plan is impossible. During the evaluation, the planner will invariably find many deficiencies, even in well-run shops.

For each of the areas listed in activity No. 3 of Figure 3, the planner would ask those questions necessary to evaluate the area's status. Some questions may even prove embarrassing, but all responses will prove enlightening, even the null response. The questions should be predefined and penetrating. The MIS long-range planning committee is an excellent source of questions.

For example, under "operations and controls," perhaps the following questions should be addressed: "Is operations meeting production schedules?" and "Is there a clear definition of responsibilities for control of systems?" Under "immediate and long-term priorities," possible inquiries would be: "Have priorities been established for approved projects? Who sets priorities? Are priorities followed? If priorities are established and not followed, why?"

The areas of inquiry listed in Activity 3 are generally comprehensive, but they are not exhaustive for any given organization. In the MIS planning vernacular, this step is also referred to as a "situation assessment."

• *Identification of planning constraints.* The identification of planning constraints is actually a by-product of evaluating current status. Anything that would be expected to limit the scope or direction of the MIS planning effort would be noted. For example, a corporate freeze on hiring over the next year would be one obvious constraint, as would a finite and saturated office space.

• *The product.* The end product of the evaluation would be a written report depicting the current status of the information services function and enumerating MIS planning constraints.

4. Setting Goals. Perhaps the most important step in the process is to establish goals for information services over the planning horizon. Goals for information services should be set by corporate management and members of the information systems policy committee. Once established, the goals provide the general framework for accomplishing the information services long-range plan.

In order to establish goals, management must address such issues as scope and quality of service, policy, organization, career development and training and the image of information services. At this point in the planning process, it is still premature to discuss information systems requirements.

5. Planning Matrix. This planning methodology advocates a "comprehensive" MIS long-range plan. A comprehensive plan focuses attention on virtually all areas that affect

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the information services function. Planning in some of these areas has been neglected by many information services departments. An MIS long-range plan that encompasses less than the topic areas listed below will give less than adequate coverage to the considerations necessary for effective MIS long-range planning:

- Policy.
- Application systems.
- Hardware.
- Systems software.
- MIS structural organization.
- Personnel.
- Management.
- Operations.
- Standardization of documentation and procedures.
- Productivity improvement.
- Facilities.
- Contingency planning.
- Social impact and legal implications.
- MIS image.
- Word processing and office automation.
- Costs.
- Others, depending on industry (for example, research and development).

A planning matrix can be used to ensure that interactions between the various planning areas are considered. Information services and user management should be aware of how planning for one area affects planning for another. The planning matrix of Figure 4 illustrates which planning areas affect each other or overlap. Each planning area interacts with at least one of the other areas. For example, application systems may have a significant effect not only on information services operations, but functional area operations.

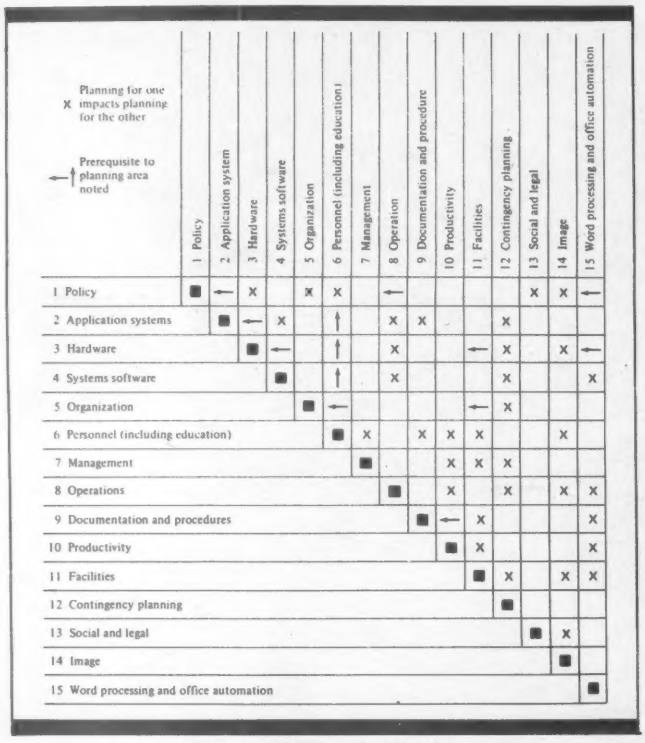

Figure 4. MIS Planning Matrix

The interactions noted in Figure 4 are included primarily to illustrate the mechanics of preparing an MIS planning matrix. They should not be construed as typical interactions. The scope of the MIS planning effort, the planning areas selected and the maturity and sophistication of the existing information services environment will significantly alter the complexion of the MIS planning matrix from one corporation to the next.

The planning matrix ensures that all bases have been covered and encourages a structured approach that reduces the complex MIS planning process to more intelligible and manageable modules. MIS planning functionaries and advisors could use the planning matrix as an aid to developing strategies for each of the major MIS planning areas. Possible strategies will be discussed in Part 3 of this series.

A written description is compiled for each interacting pair. The MIS long-range planning committee should examine the completed matrix to ensure that all interactions are identified and that each description is accurate and complete.

6. Identifying Activity Types. Since resources are scheduled and allocated by activity, specific activities necessary to carry out the planning strategies set forth in Activity 5 must be identified. In every computing center there are essentially two types of information services activities: *project-oriented* (one-time) and *ongoing* (recurring) activities.

7. Project-Oriented Activities. The following are examples of project-oriented activities:.

- Feasibility studies.
- Systems development.
- Periodic system reviews.
- Internal and external audits.
- Security analyses or audits.
- Development of documentation and procedures manual (and other in-house manuals).
- Major system enhancements.
- Systems software upgrades.
- Education (group or individual).
- Construction or physical facilities improvement.
- Hardware and software acquisition.
- Equipment installation.
- Cost/benefit analysis of a project.

8. Ongoing Activities. The following are examples of ongoing activities:

- Production and control of an information system.
- Minor enhancements to information systems (that is, general maintenance).
- Administration and management of the information services function.
- MIS long-range planning.
- Writing, publishing and distributing monthly information services

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IN DEPTH

department newsletter.

Note that ongoing activities are often the result of project-oriented activities.

9. Optimizing Mixture. Limited resources preclude the implementation of all entries on a "wish list" of ongoing and project-oriented activities. Therefore, to optimize the mixture of proposed activities for the good of the corporation, each existing and proposed project should be given some type of rating relative to risk. Risk refers to the validity of the personnel, money and time estimates and to the probability of project completion and success.

If all selected projects were high-risk, the success of the information services department and the company would be jeopardized. On the other hand, across-the-board selection of low-risk projects would probably eliminate certain needed projects from consideration. The best approach is to pick an optimal mixture of high- and low-risk projects. Each project should be evaluated relative to complexity, level of technology required and scope.

Highly structured projects provide the project leader with a clear view of what needs to be done. These projects will have a low to medium risk, depending upon whether the project involves sophisticated or relatively simple technology and/or is small or large. Similarly, projects that do not have a clear beginning and end will have a medium to high risk. An example of a low-risk project would be the introduction of a series of in-house seminars on data base management systems. On the other hand, a high-risk project would be the implementation of an integrated on-line materials requirements planning (MRP) system.

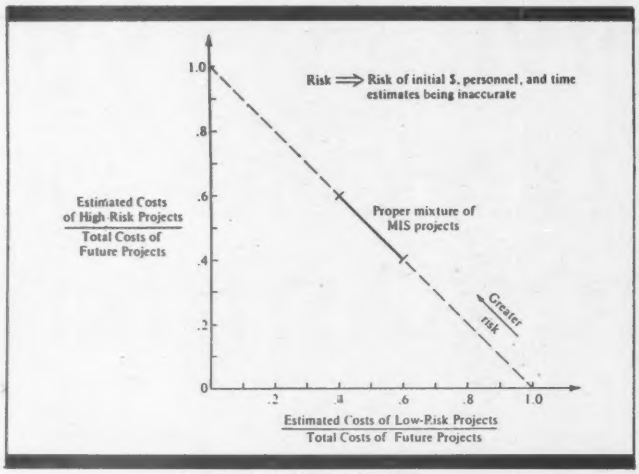

Figure 5. MIS Project Mix

Figure 5 illustrates the proper mixture of high- and low-risk MIS projects. The "proper" area would vary about the center depending upon how venturesome the organization is.

10. Setting Priorities. In order to schedule information services projects for development and implementation, priorities must be established and cost estimates compiled. Barring extenuating circumstances, existing projects and ongoing activities would be given the highest priorities.

One proven approach to establishing priorities involves collective thinking and decision making on the part of the planner, MIS director and the MIS long-range planning committee. This approach assumes that each person in the group has a knowledge of the problem or task and the ability to provide meaningful rationale to support his opinion on a particular matter of discussion. This interactive approach results in a group consensus. The steps are as follows:

1. The planner serves as the leader and explains the objective (to set priorities). Possible considerations in establishing information services priorities are: corporate need (com-

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patibility with major thrusts of the corporation and input from the ISPC), availability of critical expertise, project length and complexity, systems dependencies and integration, availability of support hardware, corporate preparedness (physically, educationally, psychologically and so on), opportunity to increase productivity and portability (potential for use as a standard product in corporate entities with similar objectives). If necessary, appropriate background information is presented.

2. The leader lists all proposed project and ongoing activities for everyone to see.

3. The leader may need to clarify why a particular activity is included in the list. If participants indicate that all activities are clear in their initial presentation, this step may be omitted.

4. In this step, each member of the group ranks the activities. Depending on the number of activities initially listed, an odd number somewhat less than the total of the list is selected. For example, seven might be selected from a list of 15 activities. Each member of the group selects what he believes to be the top seven (in the example case) activities, then assigns a ranking to each activity by starting with the extremes and working to the middle (that is, first, seventh, second, sixth, third, fifth, fourth). For ease of tabulation, each person, including the leader, notes the ranking for each activity on a separate card (highest priority item is given a "7").

5. The scores are tabulated. The group ranking for each activity is the total of the individual rankings. The activities are listed in order (most significant first) for all to see.

6. The leader coordinates an open discussion to debate personal differences with the ordered list compiled from accumulated individual rankings.

7. Repeat steps 4, 5 and 6 until it is apparent that further iterations will not significantly alter the priorities shown in the most recent ordered list.

If executed correctly, this approach has the potential to yield consensus priorities and thereby render a set of priorities that is acceptable to the information services and user management team.

11. Reasonable Estimates. The scheduling process requires that preliminary estimates of cost and personnel requirements be made for each activity proposed. These estimates are based primarily on a concept and not a design or a comprehensive description of a particular activity.

A procedure similar to the one used to establish priorities can be used to make estimates of costs, personnel and time requirements. The following steps describe an approach to making reasonable estimates:

1. The leader presents the task (for example, estimate cost of developing and implementing an MRP system) and appropriate background information.

2. Each participant submits a written estimate of cost, personnel requirements or time.

3. The leader plots on a linear scale the estimate of each member of the group.

4. The upper and lower quartiles and the median are calculated and marked on the linear scale.

5. Those participants whose estimates fall in the lower and upper quartiles are asked to explain their rationale for the low or high estimates.

6. The leader coordinates an open discussion based on the estimates plotted.

7. Repeat steps 2 through 6 until the returns for increasing the accuracy of the estimate do not merit another iteration. The dispersion of the estimates should be reduced with each iteration.

8. The estimate is the median or the mean (as appropriate). The dispersion of the estimate is an indication of the risk involved. The greater the dispersion (spread), the greater the risk.

12. Schedule Chart. The preparation of the project schedule chart is an iterative process. The scheduling process is essentially a trade-off between maintaining the priorities set in Activity 10 and minimizing the fluctuation in personnel require-

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ments (work-load leveling). Given priorities, costs and personnel requirements (Activities 10 and 11), a preliminary project scheduling chart can be prepared.

Several iterations of the project scheduling chart will be required to level the work load. Although personnel and dollar estimates are fixed, there is some flexibility to lengthen or shorten the duration of a project and/or to shift the project completion date forward or backward. When a shift in completion date alters projects' priorities, such changes should be cleared with the ISPC.

A preliminary project scheduling chart is shown in Figure 6. Project 1, a market analysis system, is under way and scheduled to be completed at the end of May. Project 4, the development of an MRP system, is scheduled to begin Feb. 1 and to be completed at the end of August. The MRP project will require 21 person-months of effort over the life of the project from Feb. 1 to Sept. 1. This is indicated by a circled "21."

The estimated dollar expenditure for Project 4 is $550,000. This amount represents the estimated total one-time project cost — materials, machine time, personnel and so on. The "½" in the square represents the estimated recurring costs in person-years per year over the life of the project. In most cases, the recurring costs begin immediately after project termination (usually system implementation). The $50,000 represents the annual recurring costs (maintenance and production) of the proposed MRP system.

13. Preparing Written Plan. Once the high-level information systems policy committee approves the project scheduling chart, information services and user management can prepare the details for implementing the proposed activities. The details are, in fact, the MIS long-range plan. Throughout plan preparation, user and information services managers and the ISPC are constantly interacting. This interaction should be somewhat formalized (again, see Figure 2 on Page 28).

The first step in preparing the written plan is to draw up a general outline. The strategic plan for information services contains the details for accomplishing the proposed activities over the horizon of the plan. The plan reflects changes, approaches, potential problems and solutions, as well as implementation methods for the proposed activities.

14. Final Approval. The strategic plan is submitted first to the information systems policy committee for approval. Once approved, the document is then submitted to the chief executive officer for his approval and support. Presumably, controversial issues would have been debated and resolved by the policy committee.

Phase III. Implementation And Maintenance

Each segment of the MIS long-range plan should have been prepared in cooperation with the information systems policy committee

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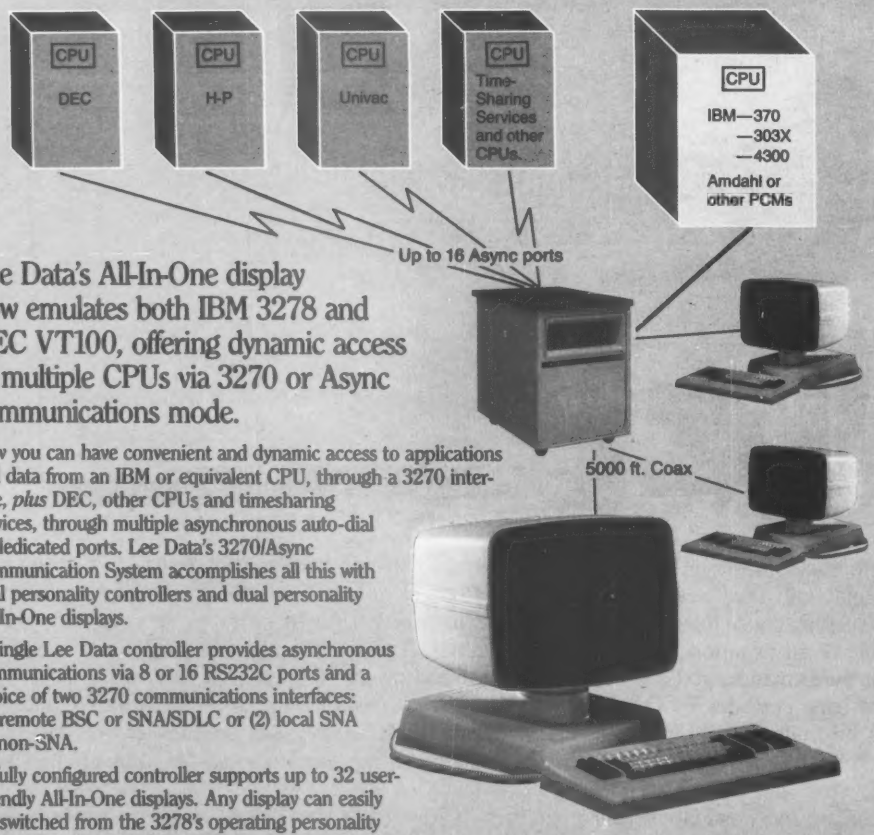

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LONG-RANGE PLANNING – PART 2

and appropriate information services and user managers. If procedures illustrated in Figure 2 (interaction between principals in the MIS long-range planning process) were followed, the plan should work smoothly and present no serious problems. However, expect some resistance to even the best plan. Judicious attention to the implementation strategies of demonstration, power and politics, persuasion and involvement will ensure that resistance is converted to support and cooperation.

Long-range plans, whether corporate or information services, tend to be neglected or, in some cases, purposely overlooked unless a formal periodic review is built into the planning methodology. Progress toward implementing the MIS long-range plan should be reviewed no more than once per quarter and no less often than semiannually.

The initial plan may take six months to two years to develop. The process is then continuous. The plan should be completely revised at least once every year and a half and no more often than once a year. Although the initial document may take two years to complete, subsequent revisions should take no more than nine months. If they do, planning staff should be increased.

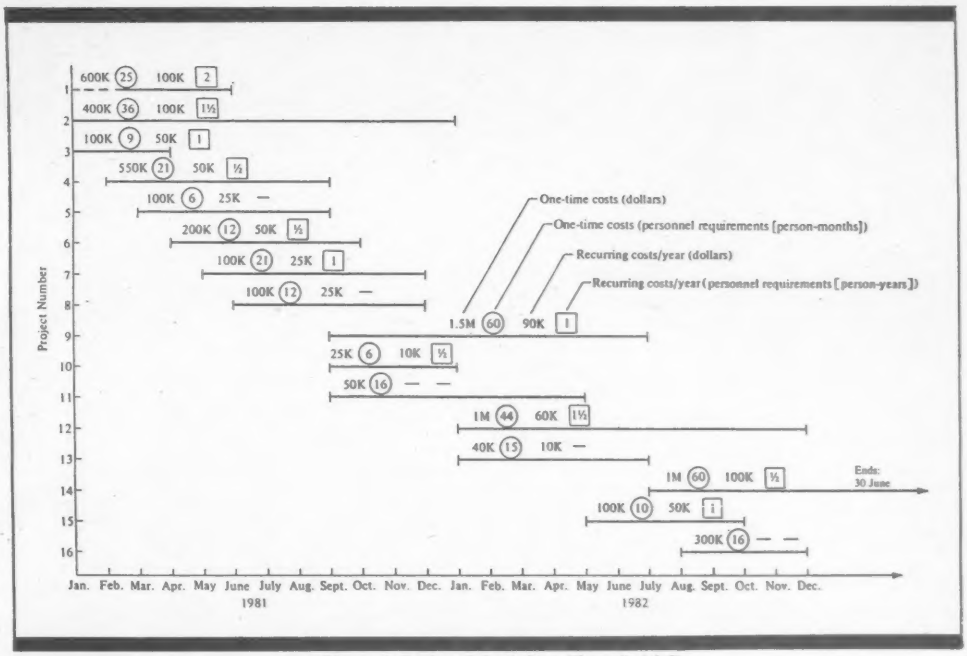


Figure 6. Project Scheduling Chart (initial)

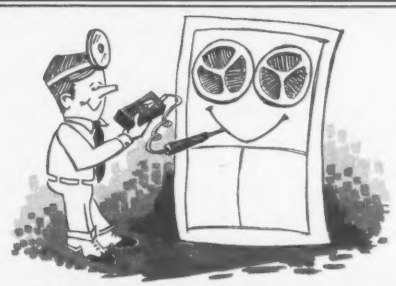
The third part of this series, "MIS Long-Range Planning Strategies," will demonstrate that a "comprehensive" MIS long-range plan is no longer a luxury, but a necessity. Part III will present planning strategies relative to policy, application systems, hardware, systems software, MIS structural organization, personnel, management, operations, standardization of documentation, productivity improvement, facilities, contingency planning, social impact and legal implications, MIS image, office automation and costs.

About the Author

Larry E. Long is a lecturer, writer and consultant in the field of information systems. He has presented a variety of professional MIS seminars in the U.S. and abroad.

Long's "Turnaround Time" column appears in Computerworld. *He has written books on MIS strategic planning, documentation and information resource management for end users and is in the process of compiling a two-volume book on management of the information services function.*

Long is an associate professor at Lehigh University and president of Long and Associates, Bethlehem, Pa.‡



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EDITORIAL

Mainframer Battle Still Rages

An announcement made recently may have jolted those who had concluded that the battle of the mainframers was over.

Sperry Univac, a firm that has roughly 8% of the large-scale computer market, became the new mainframe "king of the hill" by introducing its most powerful processor to date, the 25 million instructions per second 1100/90 [CW, July 19]. Contrary to what large-machine critics have been saying, it appears that a new round of high-end sparring — pitting the processing muscle of one vendor's machine against another's — is about to begin.

The mainframe marketplace has been unusually quiet the past year. Small business computers and minicomputers captured the industry spotlight because of their popularity, increasing functionality and low price tags. In fact, the total revenues for those portions of the industry are conservatively expected to approach the $5 billion and $12 billion mark, respectively, by 1985. And personal computers — which are fast becoming a key link in the "office of the future" — seemed to fuel rumors of mainframe extinction with forecasts that their sales figures will reach $10 billion in less than three years.

Yet mainframes continue to hold their own as demonstrated by steady customer demand and order backlogs plus strong second-quarter earnings recently posted by such big machine veterans as IBM. And their future appears bright.

In 1975, fully 18% of the computers shipped around the world consisted of large-scale general-purpose mainframes, according to International Data Corp. By 1985, the percentage of large-scale computer shipments is expected to equal only 1.1% of the total, but the dollar value of those shipments will amount to about $23 billion — 40% of the total spent by users.

Big dollars will be spent for big machines that are essential to run corporate data bases and to manage large communications networks. Perhaps the key to the continued survival of mainframes, however, is their adaptability to such emerging technologies as office automation.

For example, Hewlett-Packard Co., a manufacturer of large-scale minicomputers, has changed its marketing focus by unveiling a line of small business and desktop computers and extending its large computers into the office automation markets through new software and hardware. And even Univac believes its new 1100/90 — with twice the power of IBM's top-of-the-line 3081 Model K — could very well find a home in the office automation market.

So it appears that the war of the mainframers is not over. In fact, the battlefront is quite active, promising users more processing power than ever.

DATA PAST

Five Years Ago
July 25, 1977

SAN FRANCISCO — Members of one of the nation's largest telecommunications user groups voted to oppose the AT&T-fostered Consumer Communications Reform Act on the grounds that it would reduce competition and limit users' freedom of choice.

The Tele-Communications Association voted and put into resolution form its decision to "oppose enactment of the Consumer Communications Reform Act of 1977 in the versions submitted to date." The vote was by two-thirds majority.

Ten Years Ago
July 26, 1972

MONTVALE, N.J. — The Fall Joint Computer Conference was decided to be the last Joint Computer Conference.

A new single National Computer Conference (NCC) and Exposition, lasting five days, was planned for New York City for the following year, according to Walter Anderson, president of the American Federation of Information Processing Societies (Afips).

Afips said that the NCC would supersede the spring and fall joint conferences planned.

'Hydra'

LETTERS

More on CBMS

Thank you very much for "Home Users Seen Bulk of CBMS Market" [CW, June 21], which quoted me on computer-based message systems (CBMS). With one exception, it was quite accurate and reflected my thoughts properly.

The inaccuracy was my role while I was at Bell Canada. The article states I was the developer of Envoy 100, Bell's CBMS. Actually, I was the manager of long-range planning for the service.

Envoy 100 is based on GTE Telenet Communications Group's Telemail software and has undergone a joint enhancement program with Bell and GTE Telenet. I was part of a team of about 15 excellent people who worked on the project.

There were also a few cans of worms that the article opened up that I would like to elaborate on so that my comments are not misinterpreted.

First, there is a distinction between public services and private CBMS packages. The suppliers of public services will also supply private systems via software licenses. There are also a few companies that specialize in the sale of software packages.

Second, I was quoted as saying that a company that tries to build its own package would be "crazy." This needs clarification. To build a large-scale CBMS package is a difficult task because of the many sending/receiving/filing options that must be built in, as well as the reliability and response time problems that must be overcome.

As long as the user has no special protocols that must be supported or special delivery requirements (I ran across one company once that needed certain messages delivered within three seconds or the transaction had to be canceled), then it would be tantamount to economic suicide for a company to build its own package.

This assumes, of course, that the user can find a package for his hardware, which is normally DEC or IBM gear. But even then it is probably cheaper to buy the hardware supported by these vendors than to program a CBMS that may end up costing above $500,000 to get it running correctly. Each vendor has invested at least that much.

Third, off-net delivery and forms are indeed the cutting edges of the top CBMS, along with an accounting package to track messages through the system, which is as important as any other feature. The reason is that a good CBMS with auto-delivery to terminals can replace existing administrative message systems and link to telex, TWX, Mailgram and the others all in the same shot.

In this way, it gives more functionality to the mailbox users, plus it provides the communications manager with control over system expansion. Finally, I "warned against lumping top managers together in the pilot project." This needs to be put in context. There's nothing wrong with top managers being on the system together as long as they have a real need to communicate.

My warning means that a pilot project must consist of true communities of interest, which usually run down a chain of command. It's better to start with one top manager and his troops rather than give each top manager a small piece of the pilot.

Thank you again for the article. CBMS are coming on stream rapidly and lest we repeat the implementation sins of the past, they will need a lot of coverage from publications like *Computerworld*.

Stephen A. Caswell
President
Network Innovations
Ottawa, Ont.

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READER COMMENTARY/Lemuel Skidmore‡

X3J4 — An Inside Look at the Committee

Over the past few months, a great deal of press has been given to the work of the American National Standards Institute (Ansi) X3J4 Committee. That name may not be a household word at this point, but the current work of the committee, the draft-proposed revision to Cobol-74 (known as Cobol-80 or Cobol-8X), certainly has been the subject of many discussions.

Articles expressing a wide range of opinions about X3J4, the proposed standard and the conversion costs attributed to the implementation of the standard have appeared in trade publications.

How many of those who read and perhaps write commentary about the committee's work are aware of the composition and business of the group? The very name, X3J4, has a cold, mechanical ring to it. Visions of pointy-headed academics with no regard for real-world concerns must be fairly common.

The reality is somewhat different. As one would expect, the majority of the members (currently 24 in number) represent manufacturers who have a vested, real-world interest in the new standard, as they must develop compilers to implement the new standard.

Federal government agencies that have a large interest are also represented. One manufacturer's users' group has fulfilled the requirements for membership. One insurance company is represented, as are two other users of the language and two universities.

As for the business of the committee, almost the entire May 25-28 meeting in Cambridge, Mass., was spent reviewing and formulating responses to the comments submitted during the period of public review of the draft-proposed standard.

Many of the comments were expected and either added or returned to the standard. Others were considered but rejected as the committee reaffirmed its position. Much of the discussion surrounding the comments was educational.

Not Arbitrary

Some parts of the new standard that seem to be quite arbitrary are not. For example, the September 1981 version of the proposed standard permitted 48 levels of OCCURS. This change meant that all implementors would be required to support 48 levels in order to conform to the standard.

X3J4 received many comments objecting to this number as excessive. Some of these asked where in the world the number 48 came from. In fact, there was a quite logical reason for the increase to 48. There are 49 level numbers allowed by Cobol, and since an 01 level may not have an OCCURS, 48 remain.

One of the committee's tasks is to remove from the language those elements that are arbitrary or obsolete. Since many earlier comments had requested an increase in the maximum dimensions of a table, it was logical to increase the number to the maximum allowed by the language.

In discussing the comments objecting to 48 as excessive, the committee decided that the business applications for which Cobol was designed would have little use for structures of 48 dimensions and the standard minimum was reduced to seven. Implementors may extend beyond seven if they wish, but at least seven must be supported by a standard implementation.

The logic behind this retraction is illustrative for two reasons. It demonstrates that decisions are not made arbitrarily. It also shows that there is a legitimate concern for those commentators who take time to analyze and to state opinions on the proposed standard.

Other discussions were equally as enlightening — and time-consuming. The concern of the committee to respond to all comments and to complete the current revision is so great that the length of future meetings has been extended.

For the members of X3J4, the work for the committee is job-related, but not an entire job. They have personal lives as well. Nevertheless, the committee meets six times a year, and holidays and weekends will be sacrificed to complete the current work.

The work is of great importance. X3J4 is composed of professionals who are dedicated to the implementation of an improved Cobol with minimum impact on existing applications and implementations.

In all the publicity given to Cobol-80, the way in which the standard is developed and the rationale for changes seems to have been overlooked. That oversight serves to mislead and misdirect readers.

By the way, could it be providential that the hotel where the recent Ansi Cobol meeting took place employs a bellman named Goto?

Skidmore is director of educational services at Computer Management Resources, Inc., Hartford, Conn., and will officially be made a voting member of the X3J4 Committee in July.

His views in this commentary reflect his own personal opinion and are not an official statement of the committee.

GETTING AHEAD IN DP/Donald J. Berardo‡

How to Handle Firing a Friend

It is difficult to separate feelings about other people into business and personal categories. Yet we are sometimes forced by the pressures of the DP work environment and corporate politics to make difficult decisions that force us to act contrary to our hearts. Consider the following situation:

During the past 10 years, you have reached a management position. Your department is responsible for all new programming and systems evaluations and development for your company.

You supervise 40 professionals in DP, one of whom is a good personal friend of yours who you recruited four years ago. You share time and interests outside of work and your families are quite close.

Your buddy is one of five senior systems analysts reporting to you. He has a good track record in DP and you have never felt compromised by this friendship despite the difference in your corporate positions.

Series of Conflicts

However, without your direct knowledge or involvement, your friend has created a series of conflicts within your department, particularly among several line areas of users.

The vice-president of data processing is furious and insists on terminating your friend as soon as possible. Your investigation and discussions only confirm your fears — you must fire your friend. It is an angry, emotional situation.

What would you do?

It is a painful act to force another person to lose his source of income and stability — especially someone with whom you have emotional attachments and trust. The corporate work environment can produce such devastating events more often than any other setting where people work together.

Painful Experience

Firing a friend is one of the most painful experiences you will ever encounter next to the loss of your own job and income. Yet it should be treated in a similar fashion no matter who is involved in this rather barbaric ritual.

In the future, this process should be handled entirely differently and much more humanely. In fact, the phrase "getting fired" will never be used.

If you have documented all of the facts involved and feel that there is no other option, then you must deal with this conflict. Your friend is an adult and should be viewed as being at least partially responsible for this situation.

Analyze your information, check all of it again, and go over your conversation with upper DP management. If you are trapped by a politically tinged situation, your decision and approach may be slightly different than if your friend can be helped by you to look at both the emotional and practical aspects of his problem and your burden.

First, outline in your mind all your information and your specific feelings about dealing with your friend regarding this matter. Ask yourself: Am I angry? Confused? Helpless? Do I want to strike back at management? At my friend? Am I embarrassed by this? Do I want to flee this conflict? Put it off on someone else?

By dealing with your emotions first, you will be far more helpful to your friend. Then, outline on paper the options for both of you — especially your friend's choices of a new job, severance pay, his personal file and so on.

Remember, your feelings and hurt will last for only a fraction of his. Is he financially able to withstand such a shock? Is he stable enough to get quickly back to work? Use your support and concern to help him to mend himself, talk out his feelings and anger and to begin pragmatic plans for his recovery in the near future.

Does he need professional counseling? Can your influence be used to get him an honest and useful severance pay? Are your contacts willing to help him get a decent reference for his next employer?

Prolonged unemployment will definitely mar your friend emotionally and professionally — try to help him avoid this most of all.

Time and your support will heal his battered ego, but don't smother him either. Avoid treating him like an irresponsible, hurt child. Tell him you want to continue your friendship as in the past. Be honest, noncritical and consistent.

Get him to immediately start planning his vocational recovery by becoming intimately involved in his own plan. He must busy himself with the realities of his dilemma even though his feelings are tearing at his concentration and self-esteem.

Get him to structure his time as he did when he was fully employed. Suggest logical places to search for work.

Self-Compassion

The first rule of his recovery is self-compassion — forgiving himself everyday.

Review his achievements with him and point out his strengths in DP so that he can direct his job search toward clear goals. Let him know that you care and are willing to help, but encourage him to ask for specific assistance — don't force your support on him.

Like you, he basically knows what's best for him and his family. Respect this. Just be there to guide and support him when needed.

Do not risk your own career stability by impulsive gestures motivated by your concern for your friend. This is a fine line, but you have to consider your own survival. Don't create a second disaster.

Berardo is a management counselor and career therapist. He is a vice-president with the Meld Group in Newington, Conn., publishers of a monthly newsletter on management development.

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HUMAN CONNECTION /Jack Stone‡

Some Strategies for Formulating Job Tasks

A large number of DP managers are on the prowl for simple answers to personnel issues, even though they probably realize that their search is as fruitless as that for the fountain of youth.

To start with, personnel policies must be formulated in the light of the particular circumstances that exist in each data center.

After this drill, the policies must be implemented through carefully crafted procedures and assignments establishing management control, an effort that represents the most difficult part of the personnel administration program.

Stephen Roberts addressed the personnel policies situation in his systems development group at Catholic University of America in Washington, D.C., after it appeared that his changes in operational policies were taking effect. His new strategies are summarized below:

Roberts structured programming jobs in terms of both responsibilities and proficiencies. Each job description was organized into two categories: Job Duties, which included the subcategories of technical duties, administrative duties, contacts outside the department and supervisory duties (as appropriate); and Technical Abilities, which included those areas for which competency was expected and those which were at a developmental stage.

This is Part 13 of a continuing series on how to succeed as a data center manager.

There were seven job titles in the career ladder ranging from programmer trainee to senior systems analyst.

The analysts were assigned two to four systems each on a quasi-permanent basis. They functioned as project leaders and provided systems continuity through their function of key user interface. They were the chief systems designers and supervised the programmers who were assigned to the project teams.

Systems Specifications

As a major part of their design responsibilities, the analysts prepared the systems documentations in the form of systems specifications. Finally, they were required to review test results before releasing systems for operational usage.

The programmers, a group generally younger than the analysts (the typical analyst possessed 10 years DP experience), were responsible for implementation of systems as specified by the analysts. However, the programmers were usually rotated among project teams, reporting to a new analyst every six months to a year.

In addition to the obvious benefits to the center of cross-training, the programmers benefited greatly by exposure to a variety of systems, techniques, user departments and supervisory styles. Further, the reassignments gave center management additional opportunities for identifying candidates for future analyst positions.

Programmers had a major involvement in systems documentation, but it was assuring its accuracy rather than preparing it.

Quality Communications

Roberts stressed the need for quality communications with the users. He found early on that he couldn't just legislate good communications into being, but instead had to build the capability in the staff by making it a mandatory part of everyone's job.

As one form of a continuing exercise in this area, Roberts required technical briefings from the staff for him in nontechnical terms. As another exercise, even junior programmers were directed to work closely with users, though not in a decision-making capacity.

Instead of discussing tasks in categories, such as initial development, systems improvement, systems support, maintenance and so on — which tended to implicitly label certain tasks as more desirable than others — Roberts only used one category: tasks that carried various "benefits to the user." This policy helped to distribute the tasks more equitably and to deemphasize the less appealing ones.

Roberts encouraged his group to view their systems tasks in terms of "solving a user problem," rather than "patching a program."

This strategy changed the perspectives of the more technically oriented members of the staff to those of a user orientation.

After several years, the net result has been excellent user communications, a factor that has been key in bringing the data center a long way toward achieving its fundamental goal of improving user support.

Letters to Stone should be addressed to him at Box 270, 1377 K St. N.W., Washington, D.C. 20005.

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AT&T Offers Unix Products For Sperry Univac, IBM CPUs

BOSTON — AT&T has announced two Unix operating system products for large-scale Sperry Univac and IBM systems. The announcement was made at a recent conference held here by two Unix user groups, Usenix and USR/group.

An AT&T spokesman noted that while Unix generally runs in native mode regardless of the system it is supporting, this is not the case with the Unix/1100 Utilities and Unix System Time Sharing System (TSS).

Unix/1100 Utilities is intended for Univac 1100 systems running in conjunction with Univac's Executive operating system. A license for an initial CPU is available for $30,000. Licenses for additional CPUs are available for $10,000, the vendor said.

Unix System TSS was designed for IBM 370, 4300 and 30 series systems. It is a set of Unix utilities that run in conjunction with IBM's TSS operating environment.

The license fee for the first CPU is $100,000. The fee for each additional CPU is $20,000. Further information is available from AT&T's Technology Licensing Organization, P.O. Box 25000, Greensboro, N.C. 27420.

Performance Monitor Targets IBM IMS Users

LOS ANGELES — An additional software performance monitor for users of IBM's IMS has been introduced by Candle Corp.

Omegamon/IMS reportedly provides a window into IMS activity on a real-time basis and detects and warns of IMS availability and performance problems via an IBM 3270 display terminal. The vendor reported that 448 commands are provided to examine IMS operations.

The stand-alone product incorporates standard industry methodologies for its statistical performance analyses, according to a Candle spokesman. He claimed it enables the DP department to improve response time, availability and service levels to end users by monitoring all software resources and zeroing in on troubled areas.

Omegamon/IMS can be used both by IMS master terminal operators and IMS systems programmers.

Omegamon/IMS can be installed in one hour with no modifications to IMS, Candle claimed. Its only operating requirement is IMS Release 1.1.3 or later running under MVS.

Omegamon/IMS joins the company's Dexan line of data base management system degradation analyzers, which were announced last year [CW, Sept. 14] but were just recently made available. Dexan/IMS allows IMS system programmers working on real-time IBM 370s to focus on problem transactions and determine why response time is poor.

Both products are available on a permanent license basis for $19,500 each, the vendor said from Suite 2404, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

For Eclipse Series

DG Cross-Development Tools Out

WESTBORO, Mass. — Data General Corp. has announced three cross-development packages designed to enable users to develop programs on its Eclipse MV series running under AOS/VS for use on Micronova, Nova and 16-bit Eclipse systems.

In addition, the vendor unveiled a "C" language compiler for the 32-bit Eclipse information systems operating under AOS/VS and noted that the AOS operating system now is available on its Eclipse S/120 microprocessor-based computer.

The three cross-development packages are AOS/VS to AOS, AOS/VS to MP/AOS and AOS/VS to MP/OS.

The AOS/VS to AOS package reportedly enables users to develop software targeted for 16-bit Eclipse systems. Among the languages it supports are 16-bit Cobol, Fortran 77, Fortran 5 and PL/I and Macro Assembler. The AOS/VS to MP/AOS software is said to support 16-bit MP/Pascal, MP/Fortran IV, MP/Basic, macro assembler and Systems Programming/Pascal. The AOS/VS to MP/OS package supports MP/Pascal, MP/Basic, MP/Fortran IV and macro assembler languages, the vendor said. It was designed to handle single-user, real-time, multitasking applications on DG's microprocessor-based systems.

Software fees for the new

(Continued on Page 46)

ADR Enhances Metacobol Compiler

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has come out with Release 9.6A of Metacobol, a Cobol language precompiler that supports structured programming techniques and higher level data base interfaces for users of data base management systems (DBMS), including ADR's own Datacom and IBM's IMS.

ADR's Metacobol runs on IBM and plug-compatible mainframes under OS and DOS. The new release reportedly features enhancements to Cobol Data Language; ADR's data base sublanguage, which provides support for the Datacom/DB DBMS; and the Datacom/DC communications monitor.

Statements that invoke DBMS and teleprocessing services can be embedded in the Metacobol source programs, according to ADR. These programs are translated by the precompiler into source code that establishes parameters, work areas and CALL statements in standard Cobol necessary for on-line and batch data base applications, the vendor said.

The Metacobol services in Release 9.6A reportedly include an entry that provides global information relating to the message processing program of Datacom/DC and its on-line environment.

Also included are a data view entry that defines logical Datacom/DB or Vsam files and the means by which they are accessed; a terminal view entry that defines a communications area used to transmit and receive formatted screens or panels; and additional entries that support memory and task management services, according to the vendor.

Metacobol's permanent license price starts at $21,100 for OS; $15,500 for DOS; and $11,600 for operating systems on the IBM 4321, 4331, 370/115, 370/125 and 370/135. A VM/CMS interface is available for an additional charge.

ADR is at Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

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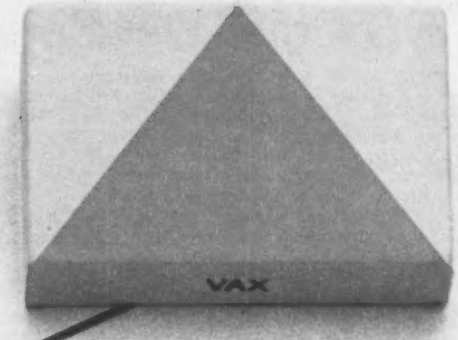
CWB 7/28/82

Networking standards.

Nobody keeps your options open like Digital.



By now, everyone understands the need for standard communications protocols. Without them, an electronic Tower of Babel would surely ensue. But there have to be different standards for different networks. A local-area network is different from a wide-area network. A public network is different from a private one.

No single universal standard has emerged. Nor is one likely to. There are simply too many diverse networking environments, each fulfilling specific, mutually exclusive needs.

That's why Digital is committed to supporting and, in fact, actively promoting the more important standards now surfacing in the various environments.

Our goal is to offer our customers a range of standards to achieve any combination of networking objectives. And we've been pursuing that goal for many years.

A forward-thinking strategy.

When we first developed our networking architecture, we understood the need for flexibility. We consciously adopted an architectural strategy that would allow our networking software to work freely with a wide range of protocols, including some that didn't even exist at the time.

The success of that strategy is now becoming apparent. As more vendors enter the networking field, Digital is uniquely positioned to offer compatibility with the emerging protocols. We've gone farther than anyone to assure that your options are open.

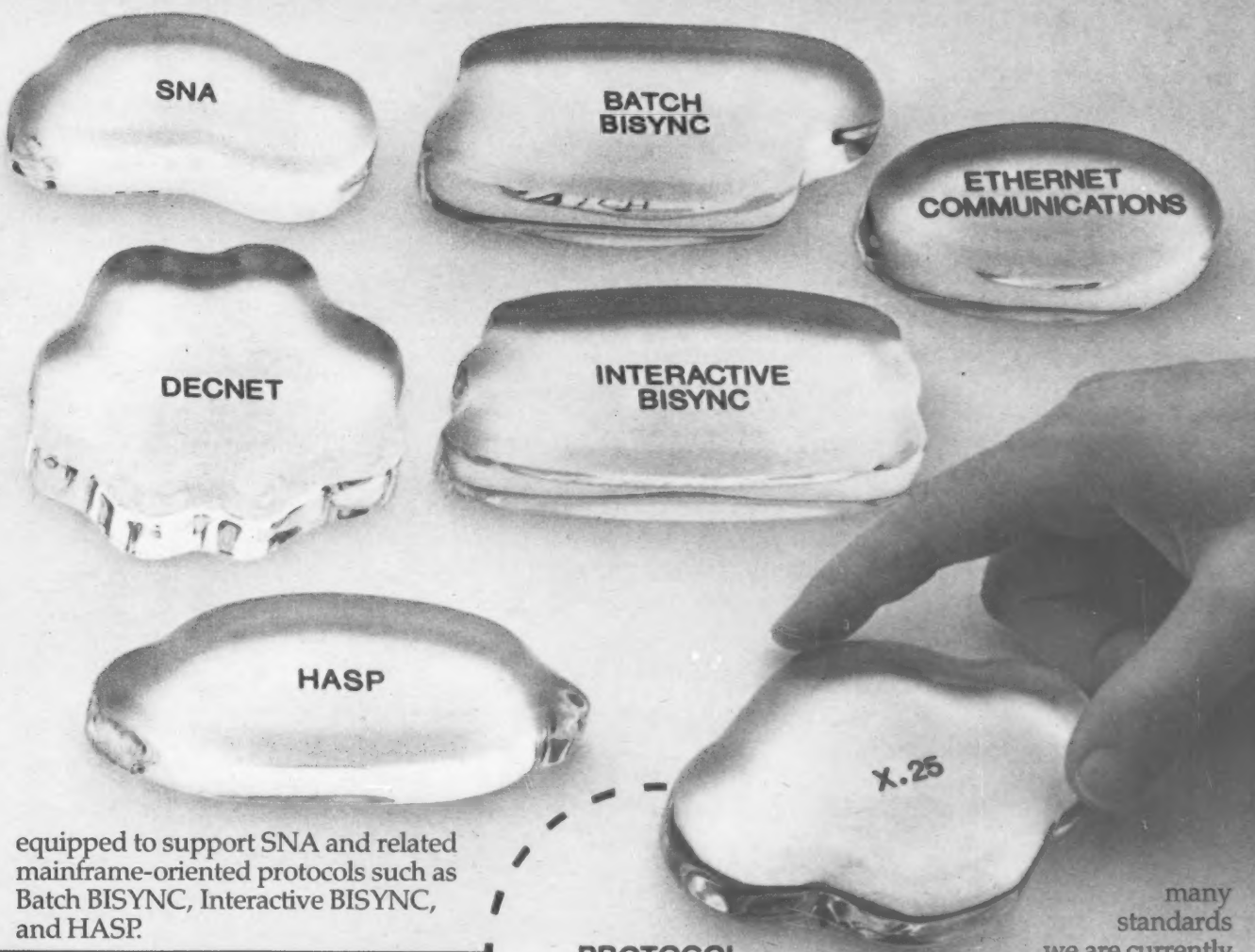
X.25 and other public networks.

Digital offers the X.25 protocol for use with public packet-switched networks such as Datapac (Canada), Transpac (France), and PSS (U.K.).

But when used with our computers, X.25 is much more than a simple link. We can provide you with the higher-level protocols that will take your systems beyond mere communications and into the sophisticated functionality that has made us a leader in networking software.

Hierarchical networks.

Even though we prefer to implement more flexible distributed networks, we are amply



equipped to support SNA and related mainframe-oriented protocols such as Batch BISYNC, Interactive BISYNC, and HASP.

Local-area networks.

Digital is one of the original sponsors of the Ethernet™* specification that has been adopted by a number of computer, semiconductor, and office equipment manufacturers. We recognized early on the need for highly reliable local-area networks. We were in on the ground floor of the definition, development and, now, the implementation of the Ethernet specification.

Distributed data processing networks.

DECnet,™ Digital's proprietary networking software, is based on a layered architecture. This is the same architectural approach followed in the model proposed by ISO. Our DECnet offers a wide range of quality networking products, products that allow such sophisticated options as adaptive path routing, down-line loading, and enhanced network management capabilities.

And so on.

We have listed a few of the many standards we are currently supporting. There are more. But even more important than the number of protocols is the attitude we have toward them. We are determined to help you meet any kind of networking objective. And our capabilities in that regard are as far-reaching as they are farsighted. So if you're planning a network, don't make the mistake of planning just for the present. Talk to the people who can meet your current needs and still keep your options open for the future. Talk to us.

Digital Equipment Corporation, 129 Parker Street, Maynard, MA 01754. In Europe: 12 av. des Morgines, 1213 Petit-Lancy/Geneva. In Canada: Digital Equipment of Canada, Ltd.

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We change the way the world thinks.

The DBMS Tale: Sound Familiar?

Do either of the following scenarios sound familiar?

(1) You have decided to take the big step and invest in a data base management system (DBMS). Questions loom: Which one do you choose? How do you determine what capabilities you need? How will the DBMS affect your user departments?

(2) You have installed a DBMS. What's next? — How do you manage this large system? Can you train your current staff to handle the DBMS or will you have to hire people experienced with a DBMS? Short of turning them into programmers, what do you think is the best way to help your users take advantage of the capabilities of the software?

If either of these situations rings a bell with you, then the upcoming Special Report on DBMS should provide some answers. The Special Report on DBMS will appear in the Oct. 25 issue of *Computerworld*.

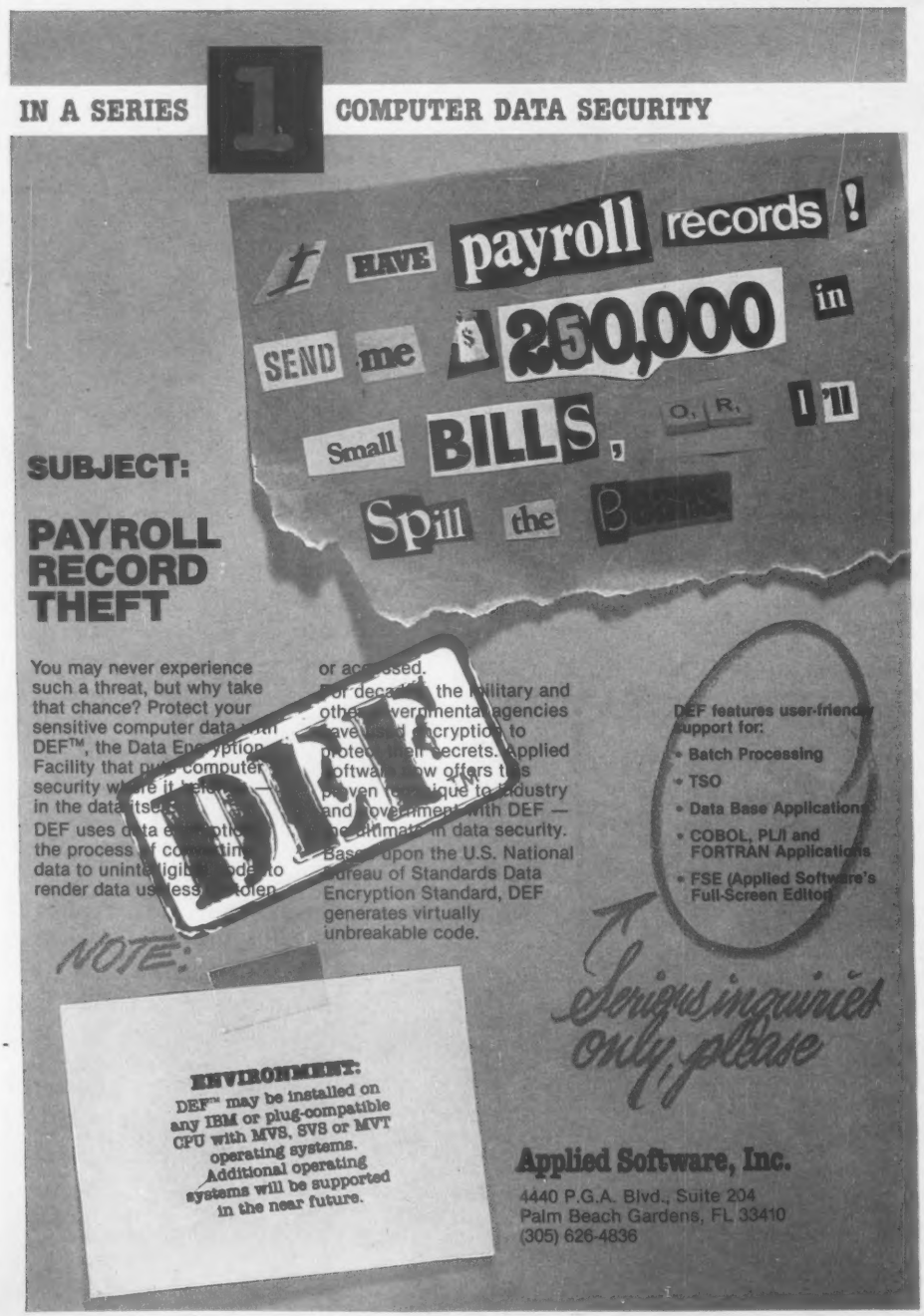
Because the report will offer a combination of user experiences and tutorials about DBMS, we need your help.

Tell us how you have faced either of the above situations and what your solutions to them have been.

Describe how a DBMS has affected your organization in terms of areas such as efficiency, productivity, staffing and your relationship with your users.

Further details on the DBMS Special Report, including the types of topics we would like to cover and how these should be submitted, can be obtained by contacting staff writer Susan Blakeney at *Computerworld*, which is located at P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

All application stories and completed tutorials must be received by Oct. 1. Please include any accompanying photographs or artwork (originals wherever possible).



DG Eclipse Line Gets Packages

(Continued from Page 43)

cross-development packages are as follows:

• AOS/VS to AOS — $1,620 for initial license; $1,000 for subsequent license.

• AOS/VS to MP/AOS — $5,100 for initial license; $1,500 for subsequent license.

• AOS/VS to MP/OS — $2,000 for initial license; $350 for subsequent license.

The C compiler for Eclipse systems running under AOS/VS is compatible with Unix Version 7 C developed by Bell Laboratories, according to the vendor.

It also features an emulator for a large number of the Unix system calls, the vendor spokesman noted, adding that a user of the AOS/VS C compiler does not require a Unix license.

AOS/VS C reportedly shares the common language runtime environment of DG's Ansi Basic, Cobol, Fortran 77, Pascal and PL/I, as well as DG's systems programming language, DG/L. It is fully supported by DG's Swat high-level language debugger and by its Text Control System for maintaining records of program revisions, the vendor spokesman said.

It also has interfaces to the vendor's Infos II file management and soft/merge utility software and full runtime support under the AOS/Real Time 32 operating system, the spokesman said.

The initial license for AOS/VS C is $7,090, which includes installation, Software Subscription Service for one year, support and Software Trouble Report Service. Delivery is 120 days after receipt of order, according to DG.

DG also announced that its Eclipse S/120 microprocessor-based computer now supports the AOS operating system.

A typical Eclipse S/120 configuration with the AOS operating environment would include 25M bytes of disk storage, a 1.2M-byte diskette, four to six DG Dasher D200 or D400 workstations and an initial license for Fortran 77 or PL/I. It would be priced at about $40,000, the vendor said.

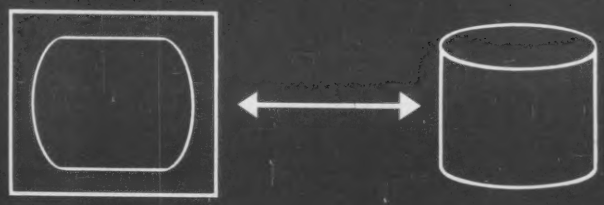
The vendor is headquartered at 4400 Computer Drive, Westboro, Mass. 01581.

Computer Methods Unveils 'Profit II'

MILWAUKEE — Computer Methods, Inc. has announced Profit II, a closed loop materials requirements planning package for processors manufactured by the Basic Four Information Systems Division of Management Assistance, Inc.

Modules available include financial planning, manufacturing planning, manufacturing control, engineering control, inventory control, sales control, manufacturing costing and accounting control, the firm said.

Pricing for the software varies depending on modules chosen. The Profit II package costs between $5,000 and $60,000, the vendor said. The firm is located at 9401 W. Beloit Road, Milwaukee, Wis. 53227.



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Release 5.0 of BBN-Unix Operating System Out

CAMBRIDGE, Mass. — BBN Computer Corp. has announced Release 5.0 of its BBN-Unix operating system for its C/60 and C/70 line of minicomputers.

These systems are designed to execute the C programming language and the Unix operating system, both of which were developed by Bell Laboratories.

Release 5.0 of BBN-Unix, the vendor's version of the Unix operating system, is said to provide increased system capacity and functionality. Its enhancements include the redesign of file system format and disk layout for increased disk throughput; a microcode assist and a reduced instruction count for inner loops and high-usage subroutines; and fully buffered terminal I/O, the vendor explained.

The enhanced software also is said to provide support for 64 directly connected terminals on the C/70 system and for a total of 2M bytes of physical memory on the C/70. In addition, the C/60 and the C/70 will now fully support any of the peripherals that formerly were restricted to operation on one or the other of the systems, the vendor noted.

This was designed by BBN to facilitate system upgrade, according to the vendor.

Release 5.0 of BBN-Unix is available for between $49,500 and $83,000, the vendor said from 10 Moulton St., Cambridge, Mass. 02238.

'RS/1-Plus' Aimed at VAX-11s

CAMBRIDGE, Mass. — BBN Research Systems has announced RS/1-Plus, a specialized version of the RS/1 research package for Digital Equipment Corp. VAX-11 superminis.

The package operates in a VAX native mode under DEC's VMS and Bell Laboratories' Unix operating systems.

Features include the ability to make pie charts, three-dimensional graphics, text annotations and multiline footnotes, the vendor said.

Designed for scientific research applications, RS/1-Plus costs $18,750. BBN Research Systems is at 10 Moulton St., Cambridge, Mass. 02238.

'Code' Targets DG, Other Minis Under Bits

TUSTIN, Calif. — Dynamic Concepts, Inc. has introduced a package called the Commercially Oriented Database Environment (Code) for users of Data General Corp. Nova and Eclipse systems and other similar minicomputer systems running under its own Basic Interactive Time-Sharing System (Bits) operating system.

Developed for Dynamic Concepts by Business Software Products, Inc. of Albuquerque, N.M., Code is said to include applications development tools as well as automatic documentation generation.

Code also features data file flexibility, menu-driven applications, multiple printer management and print spooling, a job processing system, text editing capabilities, data entry and display, report generation and application development and/or modification capability, the vendor said.

The package reportedly includes additional programs designed to incorporate operating system capabilities. Among these is a job processing system, a text editing/entry system and a data entry/display system. Also provided with Code is a software development system that includes a number of tools for the systems programmer. In addition, a library of preprogrammed routines can be accessed through a Basic precompiler.

Available immediately, Code is priced at $5,000, Dynamic Concepts said from 14712 Franklin Ave., Tustin, Calif. 92680.

Interface Links Wang, IBM Gear

NEW YORK — LBM Software Corp. has released an interface between Wang Laboratories, Inc. VS systems and the IBM 6670 laser printer.

The interface is said to join the multitask processing capability of the Wang VS with the graphics, Operator Control Language and duplication capabilities of the 6670.

The interface is said to be user-transparent and to operate in either word processing or data processing modes. The unit makes use of the standard Wang VS telecommunications utilities and 3780 protocol. A cable and a null modem or a dial-up line may be used to attach the units.

Operable on all Wang VS systems, the interface carries a one-time license fee of $7,500, a spokesman said from 251 Park Ave. S., New York, N.Y. 10010.

UFO makes CICS application programming a...

"piece of cake."

listen to the people who use it:

Greg O'Reilly, Systems Manager, Figi's, Marshfield, WI "We have gotten many applications going because UFO is so easy to use... jobs such as on-line credit card verification, file maintenance utilities created without CICS mapping, and many small requests by user departments. Most of our people aren't CICS trained."

Steve Harris, Director of MIS, Children's Hospital, Boston, MA "The first thing I did when I joined the hospital was buy UFO because I used it for more than a year at my last job; we are simply more productive in our on-line development with UFO. Many projects which were too expensive with traditional CICS technology become cost-effective when you use UFO.

"UFO trades off machine power for people power. While it takes a reasonable amount of training to teach someone UFO, you certainly don't have to be a CICS programmer to use it."

Ken Cyrus, Database Manager, Carter Machinery, Salem, VA "We were looking to get on-line transactions up faster than under standard COBOL. We had DMS installed for two weeks, but got absolutely nothing done. Within the first two weeks with UFO, we had at least 20 to 30 VSAM update/inquiry programs up.

The most surprising thing about UFO was its execution speed. I never figured anything interpretive could execute as fast as it does."

Frank Scafidi, Director of Technical Services, University of Pennsylvania, Philadelphia, PA "Two years ago we had 10 applications up under CICS. Today, we have over 50 applications up under UFO. We never could have done so much without UFO."

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FOUR MAJOR BREAKTHROUGHS IN MODEM DESIGN FROM RACAL-VADIC

1. The VA4400 - World's First Quad Modem

Racal-Vadic has done it again! This time it's the world's first quad modem, and it includes the first practical 2400 bps full-duplex modem. Here's what you get in one small package:

- 2400 bps full-duplex (VA4400 - a new industry standard)
- 1200 bps full-duplex (Racal-Vadic VA3400 compatible)
- 1200 bps full-duplex (Bell 212A compatible)
- 300 bps full-duplex (Bell 103 compatible)

For remote-terminal users, the VA4400 is available in a compact stand-alone cabinet which can also hold a VA811 automatic dialer. Eight VA4400 quad modems can be mounted in a 7-inch-high rack-mount chassis in central-computer sites.

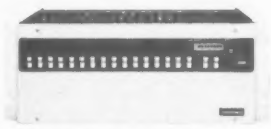
The modem of the future is here now.

2. The VA4840 - 4800 bps Bell 208A/B Compatible Modem

Racal-Vadic has made a real breakthrough in 4800 bps modem design.

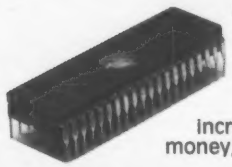
Our new VA4840 does everything a Bell 208 can... and much more. Here are just a few of its features:

- Priced at $1,350 in single quantity.
- It's smaller than any other 4800 bps modem and fits in a compact stand-alone cabinet for use in remote locations. Eight VA4840s can be packaged in Racal-Vadic's 7-inch-high rack-mount chassis.
- It's compatible with the VA811 automatic dialer.
- It operates on the switched network or 2/4-wire leased lines. Impressive technical features include: 50 ms equalization and synchronization for quick turnaround in multi-point applications and extensive user diagnostics, such as automatic self-test.



Now you can send data faster, saving time, money and space.

3. Incredible Shrinking Custom Modems for High-Volume OEMs



A new generation of intelligent modems is here - designed around a new breed of 212A and 103 LSI chips. For high-volume users, the "make or buy" decision becomes incredibly simple. Buy and save time, money, and headaches.

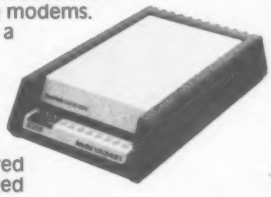
Choose from:

- A custom Bell-type 212A 1200 bps full-duplex modem on a 50-square inch PC board.
- A custom Bell-type 103 300 bps full-duplex modem on a 10-square inch PC board.

These are complete modems - FCC registered and UL approved. They have the options you've dreamed about: auto dialing with stored numbers, interactive conversation with the terminal operator, and diagnostics able to pin-point network problems.

4. Triple Modems with Built-In Intelligent Auto Dialers

We now build an intelligent auto dialer into our VA3450-series triple modems. The VA3450 series combines a VA3400, a Bell 212A, and a Bell 103 in a compact, stand-alone unit. This low-cost option is just $75. Look at what you get:



- No telephone set is required which reduces unauthorized phone calls.
- Minimizes operator errors since correct phone numbers are stored in memory.
- Storage of up to 60 digits in varying combinations
- Redials automatically up to 9 times.

This intelligent auto dialer even sets the modem speed and parity to that of the terminal.

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CTI Unwraps Assets Package For System/38

DALLAS — CTI Limited, Inc. has announced its Action Fixed Assets software for the IBM System/38.

The package features seven methods of depreciation including straight line, accelerated with variable rate factor, fixed percent, units of production, sum of the year's digits and amortization for fixed-interest loans. The depreciation methods utilize tax book vs. financial book depreciation, according to the vendor.

Reports include line-item listing of currently held assets; acquisition report, including investment tax credit; disposal report, including investment tax recapture; and a 10-year spread of depreciation for currently held assets, the vendor said.

General ledger transactions are generated to interface with CTI's Action General Ledger system, which will be available by Sept. 1, the vendor said.

A paid-up license costs $2,500, including source code and documentation. Additional information is available from CTI Limited, Suite 810, 4455 LBJ Freeway, Dallas, Texas 75234.

System/34 Gains Utility Package

SIOUX FALLS, S.D. — Handy Software has introduced a productivity and utility package for the IBM System/34 that it said facilitates disk resource management.

Enhance/34 provides simplified file maintenance with an interactive display of file information and display/print/copy of records in record or key mode with optional limits and file sharing, the vendor explained.

A programmer subsystem interfacing source entry/update, message member build, screen-format generation and program compiles, file/program/procedure cross-reference listing and direct library access to source and procedure members for full-screen display/scroll/scan are provided, the vendor said.

File and library utilization and minimum size needed can be displayed interactively or files listed in order by name, size or blocks available. The package comes with documentation, a spokesman said.

Enhance/34 costs $300 and is available from the vendor at 1713 S. Cliff Ave., Sioux Falls, S.D. 57105.

System/38 Gets Job Manager

INDIANAPOLIS — Data Processing Services, Inc. has announced the Job Management System for the IBM System/38.

The package allows the operator to set up and run a stream of batch jobs, and it also maintains a history of the last three runs, the vendor said. It also provides for individual job-step documentation and comments.

The Job Management System costs $2,500 from Data Processing Services, 8604 Allisonville Road, Indianapolis, Ind. 46250.

'Insight' Gains Tree-View

NEW YORK — Interactive Program Products, Inc. has added a pseudographic "Tree-View" concept to its Insight and Insight/General Ledger software products for IBM's System/34 and System/38.

Tree-View was added as a means of displaying a model's organizational tree to make sure all the elements of the model are being processed properly, according to the vendor.

The cost of Insight, including Tree-View, is $14,000 for the System/34 and $17,000 for the System/38. General Ledger, including Tree-View, is priced at $17,000 for the System/34 and $21,000 for the System/38.

The company is located at 800 Second Ave., New York, N.Y. 10017.

Package Aimed At Credit Unions

READING, Pa. — An on-line software package designed for use in a federal credit union by nontechnical personnel has been announced here by The Software Brokers, Inc.

The Comprehensive Credit Union System is a modular, integrated, interactive system that runs on IBM's System/34.

The system's separate modules include a central member file, member share and loan accounting, individual retirement accounts, clubs, share drafts, certificates of deposit, general ledger and student loans.

The one-time license fee of $25,000 includes the RPG-II source code and the complete modular package. The Software Brokers is located at 3701 Perkiomen Ave., Reading, Pa. 19606.

System/34 Gets Collection Aid

FALLS CHURCH, Va. — Dextel Systems Corp. has developed for collection agencies, collection attorneys and the collection divisions of credit bureaus an on-line, interactive software package that will run on the IBM System/34 or other computers with an RPG-II compiler.

The Collections Management System is said to enable the collection company to improve the efficiency of individual collection and the efficiency of client interface. The Collections Management System produces on-site comprehensive reports by debtor, client and overall agency. It provides the user with screen access to debtor and client files, making work/ledger cards optional, the vendor reported.

Extensive history retention and statistical analysis are also featured.

The package is said to provide increased collection volumes without corresponding increases in personnel.

The basic software is priced at $10,000 and includes documentation and operating instructions. More information can be obtained by contacting Dextel Systems, 5203 Leesburg Pike, Falls Church, Va. 22041.

UCC's 'Super MICR' Release Boasts On-Line Account Inquiry

DALLAS — On-line account inquiry and Federal Reserve support are two features included in University Computing Co.'s (UCC) most recent release of its UCC Super MICR II banking software package.

Super MICR runs on IBM 360, 370, 4300 and 30 series mainframes and supports REI Trace and IBM 1419, 2956 and 3890 reader sorters.

Use of the new on-line account inquiry feature will reportedly provide banks with float-management information, the ability to provide cash management services to customers and the ability to manage total investable funds on a demand basis.

The inquiry feature is said to allow banks to ascertain the number or amount of transactions for a particular account.

The Super MICR release features Federal Reserve pricing by end point, the vendor said. Also, the new Federal Reserve advice form has been incorporated into the package, giving a summary of cash letters by end point.

UCC, a subsidiary of Wyly Corp., can be reached at UCC Tower, Exchange Park, Dallas, Texas 75235.

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- Wash., D.C. (703) 522-1210

Tool Handles Files, Data In Ascii, Hex

PORTLAND, Ore. — Rasmussen and Associates has introduced an interactive file maintenance package said to display records within a file to a CRT in either Ascii or Hex mode and to allow maintenance of data. It runs on the NCR Corp. I-8000 and I-9000 minicomputers using the IDPS, Imos III, Imos V and IRX operating systems.

Superfix can also be used as a file inquiry tool to provide users with an entry into a file that can be accessed for data verification or to plug in correct data for debugging, the vendor said.

The package is available for a one-time fee of $500, including instructions. More information can be obtained by contacting Rasmussen and Associates, 4838 S.W. Hamilton Court, Portland, Ore. 97221.

Firm Offers Training Course To Assist Users

PHILADELPHIA — Atlantic Management Systems, Inc. has announced the availability of a project management education training program called Education System/80 (ES/80).

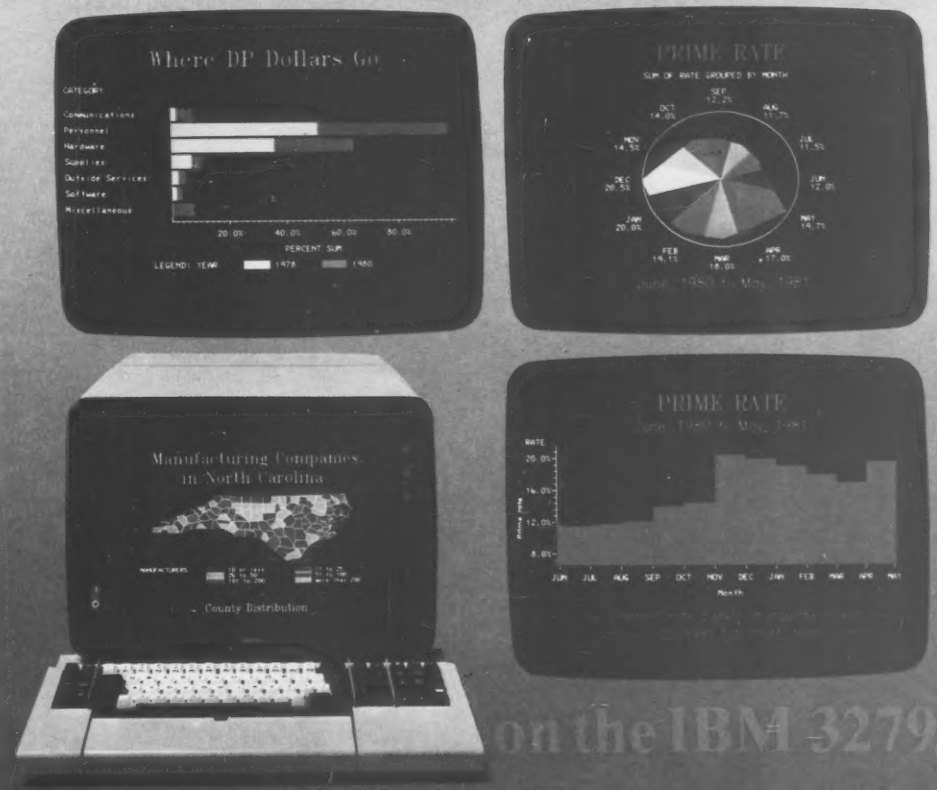
This in-house training program is intended to assist users of the vendor's Systems Development Methodology and Project Planning and Control System.

ES/80 reportedly was designed to incorporate an installation's policies, standards and procedures, the vendor said.

The ES/80 course consists of a lecturer's guide, visual overheads and masters, a student course workbook and on-site consulting support, the vendor said.

It is priced between $5,000 and $15,000, the vendor said from 320 Walnut St., Philadelphia, Pa. 19106.

SAS/GRAPH saves time...



on the IBM 3279.

Since its beginnings, SAS has provided a software system to save time. Now SAS/GRAPH adds a new dimension to the powerful, time-saving SAS system.

With SAS/GRAPH, you don't need a different software system for each of your different graphics devices. The same SAS/GRAPH system supports ADI, Calcomp, Chromatics, Hewlett-Packard, IBM, Ramtek, Servogor, Tektronix and Zeta equipment with device-intelligent software. SAS/GRAPH also provides a universal driver that can be easily linked with vendor-supplied software for most other devices.

Whatever device you use, in batch or interactive mode, you only need two or three simple statements to produce most displays. And that adds up to a big time-savings.

But best of all SAS/GRAPH is integrated into SAS, so you get the benefits of the total SAS system—a system now saving time in report writing, statistical analysis, data management and as a higher-level programming language at more than 2500 OS, OS/VS and VM/CMS sites.

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SAS saves time.

Images produced by SAS/GRAPH with IBM 3279 and Dunn Instruments 631 Color Camera System.

Job Program Fits PDP-11s Using RSTS

PHOENIX — Timesharing Technicians, Inc. has announced Menu-11, a job control program for use on Digital Equipment Corp. PDP-11 processors running RSTS.

Featuring both teletypewriter and CRT terminal modes, Menu-11 is a tree-structured program that allows users to visualize a sequence of events by displaying the sequence and flagging programs when they are complete, the vendor said.

The package is available on tape and costs $2,000, the vendor said from Suite 1, 4238 N. 18th St., Phoenix, Ariz. 85016.

DEC Users Get 'Care/DM'

SPRINGFIELD, Ill. — A package for medical and dental office management has recently been modified for use on Digital Equipment Corp.'s VAX superminis by Care Information Systems, Inc.

The Care/DM System, which manages patient information, service recording, billing, insurance processing, scheduling and collection management, was formerly limited to operate with DEC's PDP/11 family. It runs in both RSTS/E and VMS environments and is programmed in Basic Plus 2 and VAX Basic languages.

Pricing ranges from $9,950 for the PDP 11/23 to $39,500 for the VAX 11/780 from Care Information Systems at 3009 S. Sixth St., Springfield, Ill. 62703.

'Tips-1' Bows For VAX-11/780

ARLINGTON, Texas — Computer Aided Manufacturing-International, Inc. (Cam-I) has announced a version of its Technical Information Processing Systems (Tips-1) geometric modeling software for use on a Digital Equipment Corp. VAX-11/780 minicomputer.

Tips-1 is a three-dimensional solids modeler designed as an integrated computer-aided design and manufacturing system. Applications routines in this software reportedly include graphics, design analysis and manufacturing functions. Like the earlier IBM 370/168 version, the VAX version is written in Fortran and comes with four volumes of documentation. This product costs $1,000. Cam-I is based at Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.

Text Processing Module Out for PDP-11, VAX-11

NEW YORK — Lime Trea Computer Systems, Inc. has introduced a text processing software module for the Digital Equipment Corp. PDP-11 minicomputer, VAX-11 supermini and Professional 350 microcomputer.

Slim/1 is a set of programs that reportedly compress data files to a fraction of their original size. The package allows users to fit three to four times as many files as they previously could on disk or tape, the vendor said. It also encrypts data during transmission.

Slim/1 is available for $900 for a single-CPU license. Lime Trea Computer Systems is at 1 Penn Plaza, New York, N.Y. 10001.

Dibol, Cobol Software Designed for DEC, TI Gear

MONTROSE, Calif. — Mini-Computer Business Applications, Inc. (MCBA) has announced three software packages available in Dibol for the Digital Equipment Corp. PDP-11 and four packages available in Texas Instruments, Inc. Cobol for use on the TI 990 Model 4 and up. The three packages for the PDP-11 are Base Material Requirements Planning, $3,500; Purchase Order and Receiving, $4,000; and Fixed Assets and Depreciation, $3,000.

For the TI 990, the firm is offering Inventory Management, $2,000; Bill of Material Processor, $2,000; Customer Order Processing, $2,000; and Release 2 of Accounts Receivable, $2,000. MCBA is at 2441 Honolulu Ave., Montrose, Calif. 91020.

Terminals, Remote CPUs Tied

MORRIS PLAINS, N.J. — Zia Corp. has announced the Virtual Terminal, a package for Digital Equipment Corp. systems running under the T-11 operating system, that reportedly allows a virtual connection to be established between any host system terminal and the input port of a second remote processor.

The terminal to remote processor link can be made without disconnecting or otherwise altering the local terminal configuration. With an autodialing modem, users may select the modem speed and place calls to the remote site without physical access to the modem, the vendor said.

The package costs $650, the vendor said from Box 351 Morris Plains, N:J. 07869.

'Timekeeper IV' Expedites Billing, Cost Computing for Decsystem-20

PHILADELPHIA — Information and Financial Services, Inc. has introduced Timekeeper IV, a usage accounting package said to expedite cost computing and billing for the Digital Equipment Corp. Decsystem-20.

The package is customized for each site through a series of on-line definition screens. The package administrator has control of billable items, user contracts, pricing and site configuration. Both single and multiple CPU sites are possible, the vendor reported.

Three categories of reports are available with the package. Usage reports can be generated for any time period with aggregation and selection by contract, user and account. Utilization reports provide up-to-date information for the system administrator. Self-description reports allow the system administrator to track the package's processing on a day-to-day basis.

It can capture and integrate proprietary program usage information into its main billing data base. Existing proprietary programs can be easily retrofitted with the features without the need for changes in source code or in the Decsystem-20 operating system, the vendor said.

The price of the package ranges from $3,000 to $12,000, depending on the size of the host installation. More information is available from Information and Financial Services, Suite 2200, One E. Penn Square, Market and Juniper Streets, Philadelphia, Pa. 19107.

RVR Data Offers 'PDS-20' Version

MIAMI — RVR Data, Inc. has introduced an enhanced version of its larger medical software package for the Digital Equipment Corp. Decsystem-20. The Physician Data System (PDS-20) is coded in Ansi-74 Cobol using structured coding techniques, the vendor said.

The on-line package was designed for outpatient hospitals, service bureaus and large clinics. It provides control over billing, acccounts receivables and preparation of insurance either on forms or electronics validation to coincide with Medicare's preferred paperless claims.

PDS-20 costs $40,000 for a one-time license fee including a year of maintenance. RVR Data is at 3900 N.W. 79 Ave., Miami, Fla. 33166.

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Random Notes

Program Gives Vtoc In Batch Report Form

MINNEAPOLIS — Davis, Thomas & Associates, Inc. has announced a program to display IBM direct-access storage device (Dasd) volume table of contents (Vtoc) in a batch report.

The vendor said the package allows users to view the Dasd Vtoc in a more readable format than that provided by IBM's standard software. The Dasd Vtoc report typically takes up about two pages and Dasd files are listed by volume in either a sequential or alphabetic format, the vendor said.

The package costs $16, the vendor said from Suite 301, 8800 Highway 7, Minneapolis, Minn. 55426.

Color Graphics Package Maps Zip Code Data

READING, Mass. — Geographic Systems, Inc. has announced a nationwide five-digit Zip Code mapping package called Zipmap. The package operates as a front end to Issco Graphics Tell-A-Graf packages.

Zipmap is a geographic data base that enables users to display data that includes a Zip Code as a multicolor thematic map. The package provides proximal boundaries for all 48 conterminous states. Regional Zip Code code boundaries are also available, the vendor said.

The license fee for a 48-state file is $20,000 for current users of the firm's Geomap package and $30,000 for new users. Annual updates cost $5,000 for Geomap users and $7,000 for nonusers.

Geographic Systems is at 100 Main St., Reading, Mass. 01867.

Geometric Model Tool Offered for E&S PS300

SALT LAKE CITY — PDA Engineering, Inc. of Santa Clara, Calif., and Evans & Sutherland Computer Corp. (E&S) here have announced a geometry and analytical modeling program for E&S' PS300 graphics system.

PDA/Patran-G is a geometric construction and finite-element modeling system for engineers and designers. While geometric descriptions of surfaces and solids can be given as continuous functions in Patran-G, according to a spokesman, the local processing capabilities of the PS300 reportedly allow for the graphics manipulation of data with a reduction in host interaction.

PDA/Patran-G costs $15,000/year for Digital Equipment Corp. VAX-11/780; Prime Computer Corp. 550, 750 and 850; and Harris Corp. H500 and H800 systems. For VAX-11/730 and Prime 50 users, the system costs $8,000/year. E&S is located at 580 Arapeen Drive, Salt Lake City, Utah 84108.

'Mapics' Stand-In Runs on System/34

BROOKFIELD, Wis. — Manufacturing Solutions and Systems has announced for the IBM System/34 a closed-loop manufacturing software package that it said is an alternative to IBM's Manufacturing Accounting and Production Information Control System (Mapics).

The package features a bill of materials processor, work-in-progress system, inventory control, standard product costs, job costing, master scheduling, planning and capacity planning. It uses online interactive processing.

The package costs $20,000 plus installation fees. Each module is priced individually and can be purchased separately at a cost ranging from $1,500 to $4,500.

Manufacturing Solutions and Systems is at 1300 S. Calhoun Road, Brookfield, Wis. 53005.

Floating Point Adds Simulation Routines

BEAVERTON, Ore. — A library of 21 simulation routines has been added to Floating Point Systems, Inc.'s family of real-time mathematical modeling applications.

Called Simlib, this software reportedly simulates many of the continuous systems involved in ordinary differential equations (ODE) and rotational transforms. Solution for ODE usually requires such numerical integration routines as the fourth-order Runge-Kutta-Gill routine, which in this new version includes the latest innovations in the methodology, the vendor said.

Simlib runs on computers from IBM, Data General Corp., Hewlett-Packard Co., Prime Computer, Inc., Perkin-Elmer Corp. and Systems Engineering Laboratories, Inc. It sells for $975.

Floating Point Systems can be contacted through P.O. Box 23489, Portland, Ore. 97223.

CS Offers Graphics Via Time-Sharing Net

AMARILLO, Texas — Corporate Systems, Inc., a service bureau, has recently expanded its offerings by adding computer graphics software designed for financial charting and analysis to its list of time-sharing capabilities.

CS Graphics enables the company's CS on-line network customers to chart any time series data on bar or point graphs, which appear directly on their terminals, or as hard copy from their printers, according to the vendor. Up to four trend lines may be charted in each graph, and changes in data can reportedly be illustrated as well.

The bureau specializes in risk management reporting services, and service costs are based on volume. Corporate Systems can be contacted through P.O. Box 31780, Amarillo, Texas 79120.

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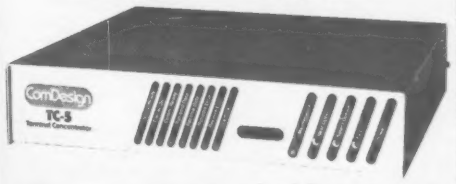

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Distribution Packages Out For HP 250, 3000 Processors

OKLAHOMA CITY, Okla. — P.B. Industries, Inc. has announced two modular software packages for users of Hewlett-Packard Co. HP 250 and HP 3000 processors. The Distribution II and Distribution III packages are aimed at users involved in distribution applications.

The packages include basic, or core, modules that include order entry, invoicing, accounts receivable and inventory control. Financial modules, such as accounts payable, payroll and general ledger are also included, the vendor said.

Enhancement modules including purchase orders, sales analysis and customer-ordering aids are also available, the vendor said.

The core modules cost from $9,200. Enhancement and financial modules cost about $2,300 each, the vendor said from Suite 185, 5600 N. May Ave., Oklahoma City, Okla. 73112.

Sharp Adds 'Forecast' To APL Time-Sharing Net

TORONTO — I.P. Sharp Associates Ltd. has recently added Business International Corp.'s Forecast to its library of economic data bases that are available via its APL time-sharing network.

Forecast is a collection of political and economic country forecasts in textual form. Reportedly, there are 35 short-term (two-year) and 15 medium-term (five-year) reports covering the political and economic situation for 35 major countries around the world. The reports are updated monthly, with individual reports changing once, twice or four times a year, according to Sharp.

Forecast is accessed through Sharp's data retrieval package, Magic. According to Sharp, once a user has signed on to its APL international network, the user has only to enter two lines of text to have a report printed at his terminal.

There is no minimum monthly charge and no initiation fee to access the Sharp APL service. Charges are primarily based on connect time ($1/hour), CPUs used (25 cents to 45 cents per unit) and characters transmitted (70 cents per thousand characters).

In addition to these charges, there is a royalty fee of $50/report to access the Forecast data base.

Sharp is located at Suite 1900, 2 First Canadian Place, Toronto, Ont. Canada M5X 1ES.

Truck Dealers Get Inventory Aid

LEWISBURG, Pa. — Computer Support Services, Inc. has introduced the Truck Parts Inventory Control System (Tpics) for the IBM System/34. The package was written for Mack truck dealers engaged in heavy truck and off-highway equipment service.

The package is a set of programs that can be adapted to accommodate other truck manufacturers and distributors. It features inventory functions, automatic price updates and sales entry and reporting.

Tpics, which can support up to three branch locations, is available for $8,500 from Computer Support Services, 38 N. Second St., P.O. Box 500, Lewisburg, Pa. 17837.

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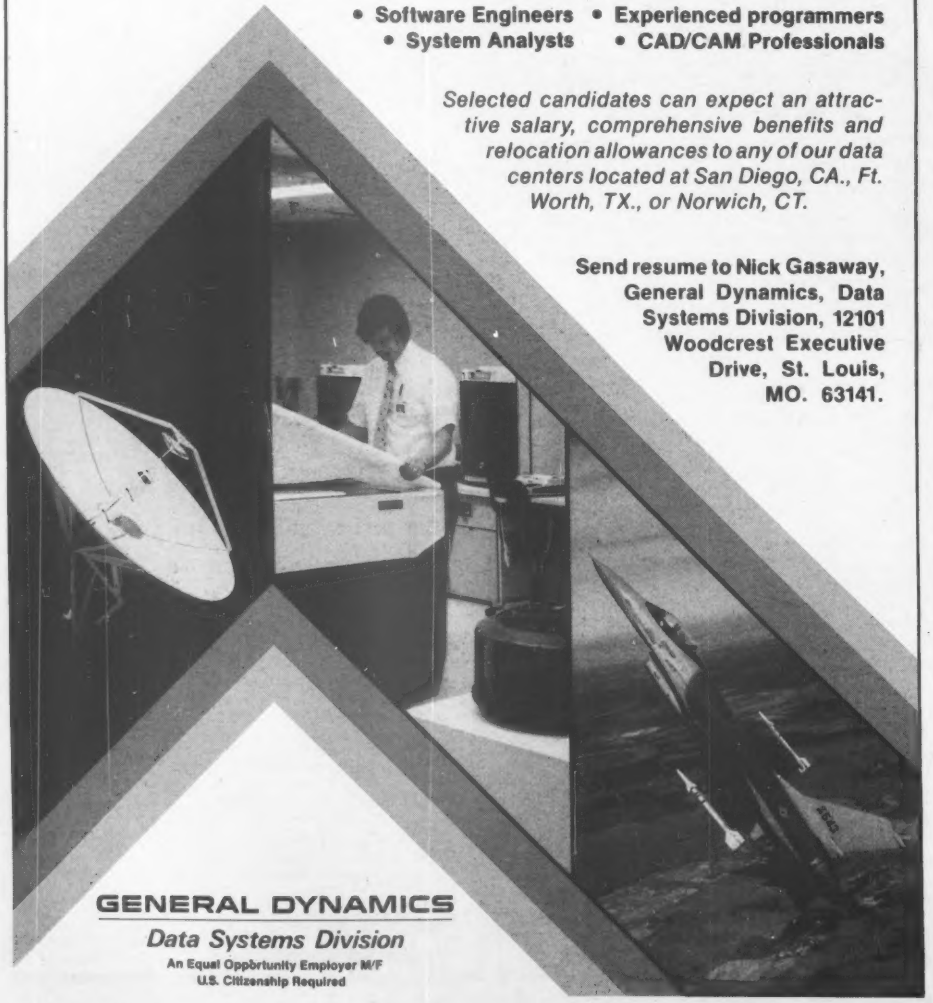

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System/34 Users Get Autobackup

CAPE GIRARDEAU, Mo. — Data Trans-Formation, Inc. has announced an autobackup procedure for users of IBM System/34 processors. The firm is also offering a menu explosion program to System/34 users.

The autobackup package can be used by users of System/34 processors with a diskette magazine or single diskette slot. It is run by entering a procedure name. The user is then prompted for backup diskettes. The package reportedly automates the rest of the backup process. The package costs $99, the vendor said.

The vendor is also offering a menu explosion program for a $15 service charge. The program allows System/34 users to select one or all menus in a library to be printed. The output will be printed on a single page giving the menu detail and the procedure statement each item will produce. The program is designed for documentation manuals, the vendor said.

Data Trans-Formation, Inc. can be reached through P.O. Box 1541, Cape Girardeau, Mo. 63701.

'I Decided to Name Him 'Gigo.' He Loves Junk Food.'

SPECIAL REPORT

More DP for the Dollar: Reaching for Greater Gains

Edited by Bruce Hoard and Marguerite Zientara

July 26, 1982

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Coordinate Their Strengths

How to Get More Productivity From Your Staff

By Anne C. Steele
And Kathy Brittain White
Special to CW‡

Productivity can be increased by successfully coordinating your staff's strengths.

The first response a typical manager might have to that statement is, "We certainly do that in our shop." There are certain elements of truth in such a statement.

There is a type of coordination that goes on in most shops. The coordination effort typically consists of assigning a staff member the tasks in which he is most interested or the tasks he believes he is strongest at performing. Experimental results indicate this process does not lead to optimum programming productivity.

Cognitive Style Positioning

Optimum programming productivity is obtained by what we call "cognitive style positioning." The cognitive style idea simply refers to the perceptions an individual has concerning problem solving and relationships with others. In experiments conducted, variations in cognitive style were important determinants in accounting for individual differences in performance.

People with different cognitive styles use different skills and have varying degrees of strengths when solving problems. Many programmers view their own approach or cognitive style as correct and underestimate the impact of differences in cognitive style on the design and structure of systems.

Cognitive style positioning is the strategy we suggest is needed to fully maximize systems development. This strategy involves analyzing the cognitive style of your staff and successfully positioning them into the phases of systems development. This strategy also stresses that more than one kind of problem-solving skill is required to optimize productivity.

'People with different cognitive styles use different skills and have varying degrees of strengths when solving problems . . . The cognitive styles are the evaluator, the conceptualizer, the analyzer and the energizer.'

The cognitive styles are the evaluator, the conceptualizer, the analyzer and the energizer. Their specific strengths and contributions to the problems in systems development are outlined below:

- **Evaluator.** The approach to problem solving is objective and precise using the strengths of deductive reasoning and planning.
- **Conceptualizer.** The approach to problem solving is heuristic using the strengths of inductive reasoning and creativity.
- **Analyzer.** The approach to problem solving is analytic using diagnostic capability.
- **Energizer.** Interprets the user's requirements and coordinates efforts between users and DP staff. Their particular strengths are their humanistic and communications skills.

An evaluator, a conceptualizer, an analyzer and an energizer should work as a team throughout all phases of program development. This positioning endeavor will increase productivity. In this case, the quality and quantity produced by the whole group will be substantially greater than the sum of the four individual efforts.

Each member contributes a particular strength during each stage included in systems development. The evaluator will work diligently to ensure the accuracy of each stage before he consents to move to the next stage. Furthermore, this individual will display the needed objectivity and patience to accurately critique the team's work.

These services will be invaluable in increasing the productivity of the team. As is commonly known, it is far less costly to find errors during the design phase than during the testing phase.

The conceptualizer will be the visionary of the team. This individual has creative abilities and will think of the appropriate solutions, particularly when the problem appears unsolvable. The conceptualizer is adept at all phases of the programming cycle.

The analyzer will be particularly strong at isolating the cause of errors. This individual will act as the diagnostician for the team. The analyzer will look at specific problems, determine the causes of errors and be able to do this quickly. Dissecting the problems during each phase makes this staff member invaluable.

The energizer will constantly ensure that the project addresses the true needs of the user. This individual will determine those needs, even from the user who has trouble articulating the problem. The energizer will continually assess the quality of the team's work in terms of aligning the user's information and requests with the team's direction.

These four styles will form an extremely effective team. On the surface, it may appear that the number of total man-hours will dramatically increase. However, these four cognitive styles combined will be four times more productive than the four working alone.

Furthermore, each individual member of the team will be able to realize higher self-actualization. The team will be able to successfully complete much more demanding systems than any one of the members could have tackled alone. The team members will feel their work is challenging and they can meet this challenge.

Challenge Key Factor

Research into job satisfaction for data processing personnel shows that challenging work assignments are a key factor in retaining DP personnel. DPers are motivated mainly by achievement and advancement.

As the cognitively positioned team successfully completes jobs far more difficult than any of its members could have aspired to work on alone, each member will feel satisfied with his own contribution to the team.

Productivity must be measured not only in terms of the time it takes to produce the system, but also in terms of the time it will require to maintain that system. With maintenance draining as much as 80% of the DP budget, it is imperative that all systems aim for easy maintainability.

We have found that a system that reflects only one cognitive style is far more difficult to maintain. A system developed with the cognitive style positioning approach reflects many cognitive styles and viewpoints resulting in greater maintainability.

Try this approach. It can optimize productivity in your shop.

Steele and White are assistant professors at the University of North Carolina's School of Business and Economics in Greensboro, N.C.

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The Ins and Outs of Choosing a Consultant

By Sheldon Rich
Special to CW‡

The use of consultants to provide specialized skills, guaranteed system delivery and peak period manpower has become widespread in the DP community. However, it is not a simple matter to select and use consultants so that your firm will receive the greatest possible benefit. How should you choose a consulting firm and individual consultants? What options are available in terms of billing arrangements? How much responsibility should be given to the consulting or software firm?

A manager who wishes to use system or programming consultants must analyze his environment to determine his answers to the questions posed above.

There are basically two types of agreements a firm can have with a consulting or software firm: time and material or fixed price. This choice of agreement will guide the relationship between the consultant and client firm and so must be selected carefully.

The time and material contract stipulates that the consultant will be paid based on the amount of time spent for the client firm and that the client will provide the material (office space, computer equipment and so on) necessary for the assignment. In essence the time and material consultant may be thought of as a temporary employee. Like an employee, the consultant will be expected to complete specific tasks satisfactorily, but he is generally not responsible for the successful completion of the project.

The fixed-price contract is usually given to a software firm. It stipulates that the consulting or software firm will provide a completed product (a working system, program and so forth) to the client and will be paid upon completion of various phases of the final product. With this agreement the consultant accepts responsibility for the entire project and will normally offer a guarantee for a specified time period. This type of contract may also contain a clause that penalizes the consultant if he is late in delivering specified phases of the project.

The contract itself must contain or make reference to a detailed description of the product to be delivered. If the final product is a complete software system the product description is the system and functional specification. A complete and unambiguous product description is necessary so that both the consultant and client understand what will be delivered. Failure to do this will inevitably lead to dissatisfaction by one or both parties.

The benefits of entering into a fixed-price contract are very appealing. You will be assured of receiving a working system without time or cost overruns. The total cost will be far lower than doing the same work in-house because software firms will compete against each other for the contract and each will lower its price as much as possible.

Nevertheless, there are serious

(Continued on SR/4)

Exploring the Used Computer Market: One Way to Successfully Shave DP Costs

By Sue Pellei
Special to CW‡

More and more companies attempting to cut costs are considering the purchase of previously used computer equipment. They are finding that used computers are considerably less expensive than new systems and, if properly reconditioned and updated, can provide excellent service.

On the market today is a wide assortment of used equipment. "Used" means everything from merely dusted off to equipment that has been completely factory reconditioned. While the price of the reconditioned equipment may be somewhat above rock bottom, there are other considerations that may make it the better buy.

Basically, factory reconditioning is the process of rejuvenating equipment by the company that originally manufactured that equipment. This can result in several advantages for the buyer.

First, hardware or software problems that might have existed are detected and eliminated; second, the computers are updated with engineering changes; and third, the original manufacturer gives the warranty for the equipment it reconditions.

There are some key areas to be explored when considering the purchase of used computers.

Are mechanical acceptance standards maintained through inspections and testing? Companies that meet the highest standards inspect for worn parts, malfunction of components or assemblies and the fit of panels, racks and other structural elements. Appropriate repairs, replacements and corrections are made. Safety features are confirmed for working order.

Electromechanical components should be reconditioned or replaced and tested for proper function. The computer itself should be performance-checked to assure the proper operation of its electronic modules, including CPU, memory, interfaces and other operating circuitry. All cabling should be inspected and replaced if necessary.

During a computer system's lifetime many improvements (engineering changes) are introduced by its manufacturer. Those changes are supported by detailed documentation and parts inventories that enable the manufacturer to incorporate them in customer-owned systems and systems to be reconditioned.

When buying a used computer, you should determine if improvements have been made. The reconditioned system you purchase might actually be better than when it was new.

The source of used equipment varies widely. Digital Equipment Corp., which reconditions equipment, said that customer returns make up a low percentage of its source, while most of the equipment has been used by the computer company's own business operations or as demonstration models.

The warranty that comes with reconditioned equipment is a good indicator of quality assurance by the manufacturer. Ideally, the warranty would be the same as the warranty the company gives for its new equipment.

One of the most distinguishing factors in selecting computer equipment may be the reliability and availability of maintenance support. The computer company may, for example, offer a choice of service contracts ranging from periodic routine maintenance to 24-hour on-site maintenance.

Installation costs may or may not be included in the purchase price of the equipment; in either case it is a good idea to have the equipment installed by the manufacturer of the product. This minimizes the risks of delayed start up time.

Review what documentation will be provided with the reconditioned computer. Will it include the prints for the CPU and full diagnostics for system checkout as well as the operating manuals?

The original manufacturer that reconditions computers is likely to make available the same training facilities it offers customers who buy new equipment.

Training may include courses in operation and maintenance of the systems. At times training is offered at customer sites or there may be a variety of self-paced instruction programs offered.

Finally, what is a good buy for a used computer? There is more that goes into the answer to this question than just price. Once installed, your computer will become an integral part of your operations. You will rely on it; your success may also rely on it.

For those reasons, the system you choose should be as reliable as possible. A factory-reconditioned computer that meets all the above criteria may well be as reliable and economical as a computer can be.

Pellei is a marketing communications specialist with Digital Equipment Corp., Hudson, N.H.

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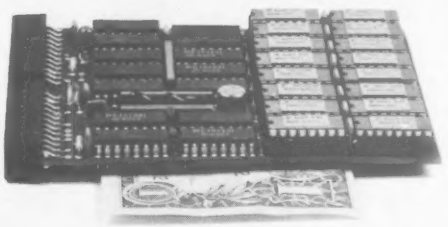

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Question Yourself Before Hiring a Consultant

(Continued from SR/3)

drawbacks with a fixed-price contract, especially if it is to develop a complex software system. The systems development process is iterative — each phase of the system life cycle leads into and receives feedback from the following phase.

For example, during the design phase a customer inquiry screen might be designed and approved by the user. This will lead to an implementation phase during which this screen will become operational on a CRT terminal. The same user may then review the customer inquiry screen on the CRT terminal and decide that the original design he approved does not really meet his needs and must be modified.

This user feedback will lead to another iteration of the design of the customer inquiry screen to be followed by a second implementation. All is well if the system is being developed in-house. But if the system is being developed by a software firm on a fixed-price contract, the original specification for the customer inquiry screen is all the software firm is responsible to produce.

Modifications outside the original contract will incur an additional charge and this time the software firm has a virtual monopoly on the situation since it is now the only firm familiar with the details of the system.

Fixed-Price Agreement

Notwithstanding the problems, the fixed-price agreement remains an excellent means to develop systems of all types. The clearest benefits are:

- Lower cost.
- Elimination of time and cost overruns.
- Guaranteed delivery.
- Elimination of permanent staff hired for limited projects.

The time and material agreement is similar to the fixed-price agreement in that it eliminates the need to hire additional permanent staff. However, it does not eliminate time and cost overruns, nor does it guarantee delivery of the final product. With this arrangement the client firm takes responsibility for the direction of the project and for the quality of the final deliverables.

The individual consultant plays the role of an employee, but without the restrictions imposed by personnel department rules and regulations. The consultant will be more motivated and more productive than regular employees since he usually receives a higher salary and he does not enjoy the security of a permanent position.

However, there are also pitfalls with this type of agreement. The high wages and mobility enjoyed by the consultant may create rivalry among regular employees. Some employees may feel threatened by the mere presence of a consultant who has greater technical experience and abilities. In addition, the direct cost of a consultant will be more than double that of a regular employee. Nevertheless, the greater productivity of the time and material consultant will more than offset the additional cost.

At this point you might ask yourself which strategy will lead to the lowest cost and highest quality systems. The answer is to use both time and material and fixed-price agreements. Your project goals and constraints should be examined. Are there critical time constraints? Budget constraints? Are the project requirements well defined?

If the answer to any of these questions is yes, then the fixed-price contract should be considered.

Project Requirements

Are specialized technical or business skills required for the project? Is there a need for additional manpower for specified time periods? Is there a need for highly motivated employees to breathe life into the project? If the answer to any of these questions is yes then the time and material contract should be considered.

Another possibility is to vary the consulting agreement with each phase of a project. The analysis phase is most suitable to a time and material contract. Program documentation, coding and unit testing is often most suitable for a fixed-price contract. Detail or program design is suitable for a fixed-price contract only if the general design and functional specification is clear and complete.

It is certainly true that every sophisticated DP shop faces difficulty in finding and hiring high-quality professionals. With the current shortage of qualified personnel there is little choice but to use consultants. Consultants bring new ideas and offer fresh perspectives to many technical and business problems. When consultants are used properly they help to reduce costs and to increase the probability of successful project completion.

Rich is president of Spectrum Software, Inc., Elizabeth, N.J.

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Facing Up to Tough Tasks

Two Places to Cut Costs: User Reports, Storage

By Patrick J. Mailey
Special to CW‡

As organizations face up to tougher times, data processing management must look hard at all aspects of DP cost control.

At least two of the more obvious cost-reduction areas are user reports and magnetic storage.

As an instructor in DP user courses for several years, I have asked each class two questions: How many people in the class receive computer reports they can't or don't use? How many receive reports that are needed but are often difficult and awkward to use and which tend to make their jobs more difficult?

About 50% of the classes have responded to those questions in the affirmative in the 14 years that I have been teaching — Little or no improvement in 14 years, in spite of dramatic technological progress!

50% Useless or Awkward

Right now, DP managers, your users regard 50% of the computer output they receive as either useless or awkward to use. A sobering thought, isn't it? "How can this be?" you may ask, since you regularly poll user satisfaction. The answer may be that you need to address the problem using a new and fresh approach.

To start with, and with top management awareness and support, attach a simple questionnaire to each scheduled printed report that goes out to your users at all levels. Simply ask the same two questions I use in my classes and add a check box. Where CRT screens are used, you may display a message asking the users for their level of satisfaction. Once again, invite their response.

Although these efforts may not get you the total usefulness inventory you are looking for, you will get a significant and immediate payback. For those users who respond that their reports are of no use, verify in person and then discontinue the job. Document the cost savings on each report as it is deleted.

Those users who find their reports on screens difficult to use can help you redesign them so that the information is easier to use and more helpful in their jobs. Admittedly, this latter response will take systems and programming staff time but the effort will be worth it in user satisfaction.

Don't Be Defensive

Above all, don't be defensive as you approach this task. Instead, be open with your users. You may be able to show that the problem can be traced to the original user requirements and is, therefore, "not DP's fault," but who cares now? It is DP's responsibility to deliver a quality product that helps the user and the organization.

Another cost area that is often neglected, if not downright overlooked, is the management of electronic storage, tape, disk and diskette.

DP managers must examine the usefulness of data files on a regular basis. The haphazard approach to file purging is usually too inconsistent to be effective. It is often done as an emergency action to open up space for new or urgent data files.

Remember: Data that is not used goes bad. It becomes unusable. So why keep it?

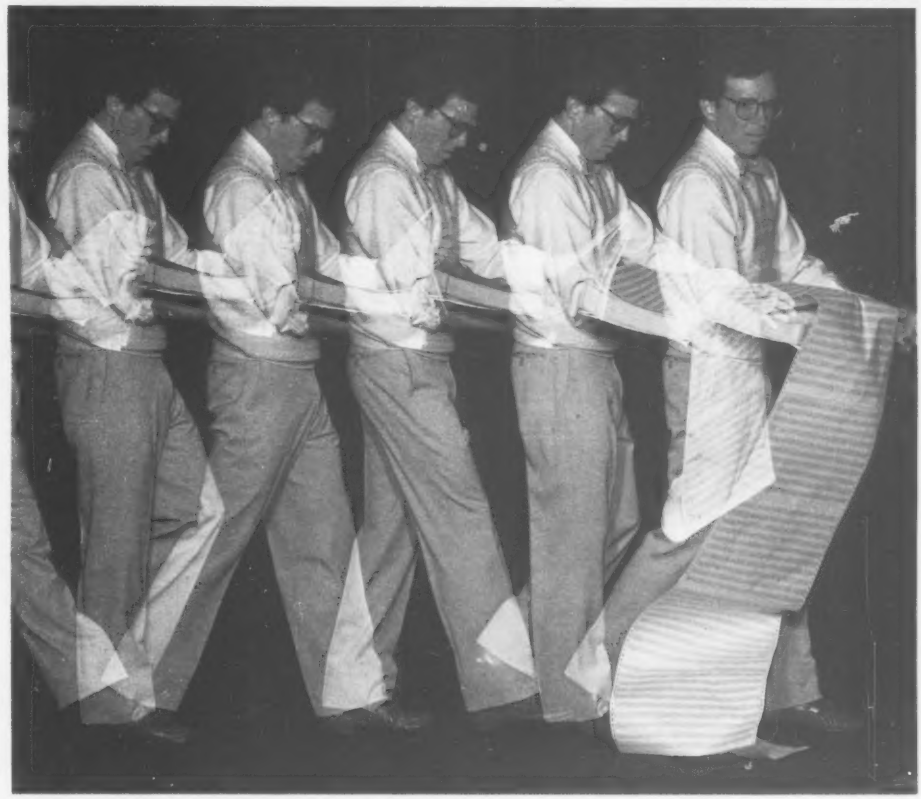
Remember too, that analysts and programmers frequently create files for testing, backup and so forth and never get around to deleting them once the files are no longer needed. And, of course, the storage costs go on and on.

'Right now, DP managers, your users regard 50% of computer output they receive as either useless or awkward to use. A sobering thought, isn't it?'

There are a number of things DP managers can do to clear up expensive electronic files:

- Take inventory of all stored data, on-line, off-line and archived to tape. Identify the owner.
- Get with owners either through the questionnaire method or, preferably, in person. Review each file carefully and objectively.
- Address the need for expensive on-line storage first. Often this data can serve the user just as well stored off-line. You may even find it is no longer needed!
- Data may be archived to tape and aged for future disposal.
- Disk- and tape-stored data may be a candidate for microfiche.

(Continued on SR/6)



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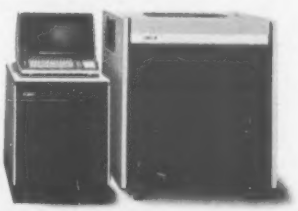

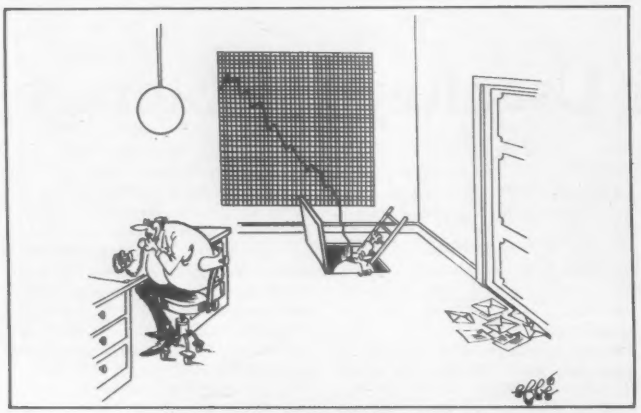

'We Have Also Rented the Basement . . .'

DP Instructor Tabs User Reports, Magnetic Storage for Cost Savings

(Continued from SR/5)

• Large detail files may be condensed through summarization of the critical data elements and thus greatly reduce the file size.

• Examine technical areas such as blocking factors, file methods used, compaction techniques and so on.

• Analysts and programmers may have files out there that no one even knows about! Try to identify and delete or dispense with them as appropriate.

Approach the storage problem as you would a request for the purchase of an additional file cabinet. Ask, "Are we really out of space, or is there data filed that is no longer useful?" Your response to such a request should be the same as a request for additional disks, tapes or expensive drives.

Opening up file space will give you immediate dollar savings through reduced computer processing, cost avoidance and, importantly, free up sorely needed file space for new applications. You will avert the purchase of new tape reels, disks and drives. The longer term savings through the use of more optimum technical methods, compaction and blocking factors may require additional staff time, but it will be well worth it.

Summary

Once again, attack these two areas for quick dollar returns: User reports and magnetic storage. You will reap immediate cost savings as well as continuing cost benefits in the long term.

Recently, I made these suggestions to a prominent DP center that relied on a service bureau for its processing. It immediately reduced their monthly storage costs from $9,000 to $6,000, a direct savings of $3,000 per month. Later efforts added to these savings.

Today, with equipment dispersal and proliferation, including user workstations, demands for more and more service and increased cost consciousness, DP management must lead their organizations in setting standards and cost-justification criteria for all old and new computer output and magnetic storage.

The days of adding more storage on the mere assumption that "we're out of space" can no longer go unquestioned.

So go after the immediate cost savings now available to you. Next, establish a plan and set standards for scheduled monitoring and expeditious disposal of all useless reports and worthless files.

As you reap these benefits, be sure to document the savings and receive the management visibility you will deserve.

Mailey is a program management specialist for the Office of Financial Management, State of Washington DP Division.

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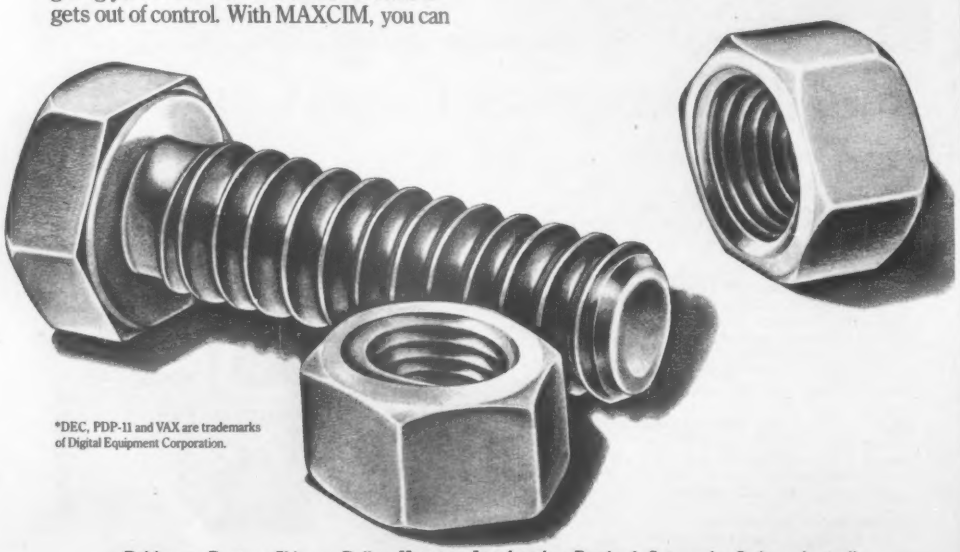

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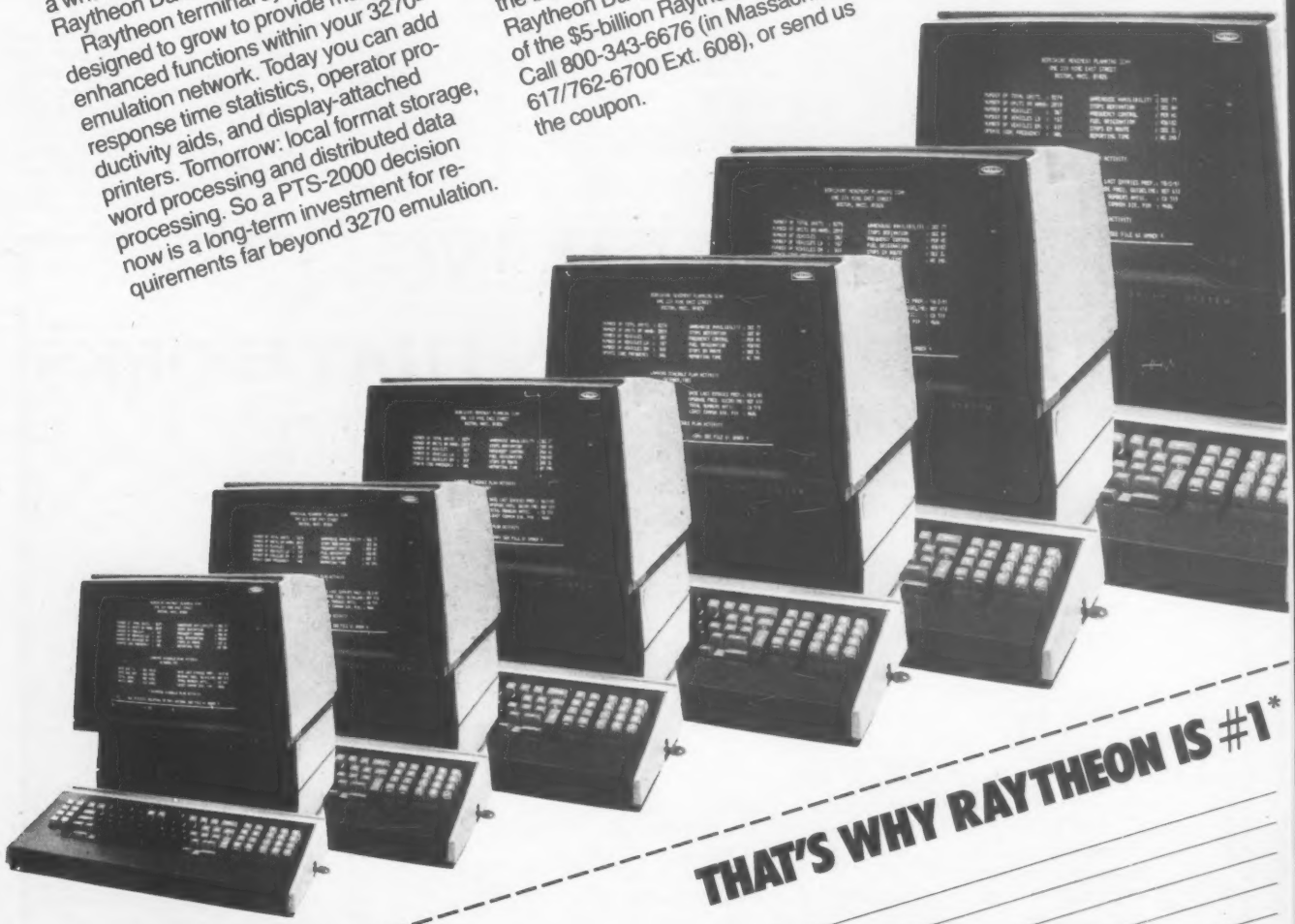

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How to Increase Costs, Lose Everyone's Respect

By Steve Wright‡
Special to CW

Here are 25 ways for a management information systems director to increase development costs and lose the respect of users, managers and staff:

1. Have six people spend five months evaluating a data base management system (DBMS). Then benchmark two or three just to make sure you select the right one.

2. Select a data base system without asking the users to participate in the evaluation. They will be happy with the selected software — won't they?

3. Let technicians select a "designer"-type data base system. This will prevent new applications from being developed for a few months while everyone is in the vendor's education classes. You did budget for those inexpensive classes, didn't you?

4. Save money by not having a data base administrator's salary in your budget. Recovery, security and data dictionary maintenance can be performed by each user on their honor.

5. Don't let items like restart and recovery worry your application programmers: Recovery can be included in the applications at a later date. After all, you have a schedule to meet, don't you?

6. Don't worry abut "selling" the new DBMS to the users. Once it is installed, they will have to use and like it . . . won't they?

7. Never consider using a software consultant. After all, they get paid in real money, the type you have to justify.

8. Assume that the (data base, payroll, fixed asset and so forth) software package works the way it says in the documentation. If the feature is documented, it must be there, right? By the way, your staff did read the documentation, didn't they?

9. Stay with "Big Blue." Your manager wouldn't have the gall to expect you to justify going with the leader, would he?

10. Keep the report writer salesmen away from the end users. You don't want competition from users equipped with Information Builders, Inc.'s Focus or Panasophic Systems Inc.'s Easytrieve, do you? What do you think the firm is paying you for?

11. Make sure your senior analyst spends six to nine months developing each new procedure. This can be done by having infrequent reviews and by pretending to "give her the initiative." Then make radical changes before sending it to your manager for approval/more changes.

12. Be sure to manage the project schedules instead of the projects. Isn't that what you're reviewed on?

13. Always go with a software package, even if the $10,000 fixed-assets system will need $30,000 of modifications by the vendor before your company can use it. Didn't you read somewhere that packages are less expensive then in-house development?

14. If a two-person project looks like it will be late, add two more programmers. That will shorten the remaining development time by one-half, won't it?

15. Keep your CICS programmers away from products like Oxford Software Corp.'s User Files On-Line or Planning Research Corp.'s Central Software. You don't really believe in those claims of increased productivity, do you?

16. Be certain that the personnel department requires a four-year college degree for all of your open positions. You don't really want to hire experienced Navy or Air Force veterans, do you? Or those mercenary, work-oriented people with only associate degrees.

17. Don't waste money sending your employees to training classes to keep up (unless they are free). Use training as a reward for 10 years of good conduct.

18. Keep your employees in meetings as much as possible, or they may start to feel as if they actually accomplished something during the day.

19. Always think "users," not "customers." You are a monopoly — and don't you have respect for the Post Office and the electric company?

20. Beat down any attempt by users to obtain time-sharing access. Make sure every application, no matter how small, uses the corporate data base. They won't be able to say that you are not consistent!

21. Make sure your staff is in promptly at 8 a.m., even if they came in last night for four hours to correct a problem. Your manager might ask where they are, and you would be on the spot. After all, programmers are supposed to come in during their off hours occasionally . . . isn't that why their salary is so high?

22. Never tell your staff that they are doing a good job, they might start thinking you're "easy." Be sure to raise your eyebrows, however, if you hear of an "unauthorized" job control language error. It shows them you're on top of the situation.

23. Issue strict orders to systems programming to apply each system upgrade or fix the day it arrives. Management is expecting leading-edge software, not maximum availability.

24. Keep your programming staff changing office locations every six months or so. Rerouting coaxial cable isn't that expensive, is it?

25. Keep your resume up to date.

Wright is a DP management consultant based in Sunnyvale, Calif. He would like to hear from anyone who already uses this methodology and is still employed.

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Tips on Implementation

Minimizing Application Development Costs

By Robert A. Camacho
Special to CW‡

In today's performance-oriented DP environment, an increasing amount of attention is being focused on cutting the high cost of developing application software. Dramatic advances in this area are being made because of the integration of advanced system software techniques in the application software field.

The following provides a brief discussion of the fundamental basis for minimizing application development costs plus some practical implementation methods.

The traditional choices of either custom-written application software or acquiring an existing package are viewed by many managers as two undesirable alternatives.

Custom designing and programming an application system from the ground up is an expensive and risky proposition that generally takes a long time, regardless of whether it's done in-house or contracted to an outside agency.

On the other hand, buying an application package generally means accepting something less than a complete solution to your problem. That's assuming you are fortunate enough to locate a package that even addresses your problem. New alternatives are needed.

Flexibility vs. Cost

In order to better understand the nature of the problem, consider the degrees of flexibility offered by these implementation methods.

In the case of a rigid application package there is very little flexibility available to the user. Packages that provide for some parameter input to direct its processing increases flexibility by allowing the user to make a few of the choices that determine how the application will function. Overall, though, packages traditionally have provided very low levels of flexibility.

Custom designing and programming an application system in a source language such as Cobol lies on the opposite end of the flexibility scale. This implementation method provides virtually unlimited flexibility to the user.

However, such a high degree of flexibility is expensive. This is because of the simple fact that flexibility implies making choices or decisions. The more flexibility, the more choices that must be made. And each choice has an associated cost and risk.

The problem with the two traditional implementation methods is that they lie on the extremes of the flexibility scale. Packages don't provide the flexibility necessary to be effective, while source language programming provides much more flexibility than is needed to solve most application problems.

What is needed are alternative implementation methods that offer varying degrees of flexibility. Today the integration of advanced software techniques into the application area is making these alternative methods available.

The Ideal Solution

Before discussing the practical implementation of these alternative methods, first consider the ideal solution. In any application implementation method each choice that must be made contributes to the total system cost.

The ideal method would be one that minimizes the number of choices only to those necessary to solve the application problem.

In the future, application developers will have a wide array of implementation methods to choose from, each varying in its degree of flexibility.

When implementing an application system they will select the implementation method that offers the minimum flexibility necessary to solve the problem, thereby minimizing the cost of the solution.

Providing application developers with these new implementation tools requires first making a significant portion of the total number of choices necessary to solve an application problem plus providing a method for the user to specify the remaining choices necessary to tailor the system to solve his particular problem.

The savings results from the ability to repeatedly use the previously-made choices or code.

Actual software implementation of this concept is generally done either interpretively or generatively depending upon performance considerations. In both methods there ex-

(Continued on SR/10)

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Cutting Costs in Application Development

(Continued from SR/9)

ists a group of variables called design variables.

The number of design variables and their allowable range of values determines the degree of flexibility of the system.

The values associated with these design variables determine the characteristics of the application. In the interpretive method, the design variables are present at runtime.

They are used to direct the processing functions performed by the system.

The chief advantage of this method is that the design variables can be altered on the fly to change the characteristics of the system.

'The traditional choices of either custom-written application software or acquiring an existing package are viewed by many managers as two undesirable alternatives.

'Custom designing and programming an application system from the ground up is an expensive and risky proposition that generally takes a long time, regardless of whether it's done in-house or contracted to an outside agency.'

In some types of application systems this is the overriding consideration. The main disadvantage is slower execution speeds because the design variables must be consulted to direct the systems operation at each decision point.

Another disadvantage is the system's increased complexity due to having both design variables and application data variables present at runtime.

The Generative Approach

In a generative implementation the design variables are used by a generator to "write" a program at either the object code or source code level that will perform the functions specified by the design variable.

In this approach the design variables are not present at runtime though they are implicitly present in the generated code.

The generative method results in systems that run faster and are less complex than their interpretive counterparts.

Additionally, if source code is generated, the user gains the flexibility to modify the generated program at the source level if desired. The major drawback of this approach is that changing a design variable will require regeneration. The design cannot be altered on the fly as in an interpretive system.

Cogen Generation System

One mid-flexible implementation of the generative approach is the Cogen Generation System developed by Jacksonville Software Development Corp. for Burroughs Corp. large systems.

This system provides the application developer with a set of general-purpose program generators that are application-independent. The types of programs that can be generated include both on-line and batch programs.

The user provides the details of each application program via a set of nonprocedural specification statements.

The specifications describe such things as what records will be updated, how they will be accessed, what edits must be met and what screen formats will be used. The Cogen generator reads the specifications, sets the design variables and then generates a complete readable Cobol source program that will perform the task specified.

The choices that the application developer must make are limited to those that describe what must be accomplished to solve the application problem.

The Cogen system provides the "how to" procedures for performing the specified functions.

The result is that development costs are reduced to less than half of the hand-coding source language method.

As the sophisticated techniques of the systems software programmer are applied to the application development field, we can look forward to seeing a wider variety of application implementation methods appear.

In order to minimize our application development cost we must be willing to select the method that will solve our problem with the least amount of effort.

Camacho is director of software products at Jacksonville Software Development Corp. in Jacksonville, Fla.

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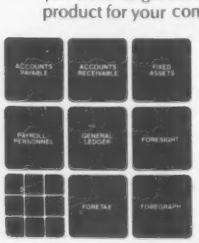

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Data Dictionary the Clincher

DBMS Helps Small DP Staff Upgrade System

INDIANAPOLIS — As a growing manufacturer of electronic communications equipment, Regency Electronics, Inc. here had to face the upgrading of its computer environment to accommodate order entry, billing and inventory control applications for a new subsidiary.

Stymied by the thought of its first data base application, the company's small DP staff established ease-of-use as the major prerequisite when it launched a search for a data base management system (DBMS) in tune with its specific needs.

With projected sales of $70 million for 1981 and six operating divisions in five states, Regency has been cited as the number-one growth corporation in the U.S. with sales under $100 million. The company's diverse product line includes FM business transceivers (two-way radios), monitor radio scanners, electronic test equipment, devices for regulating energy usage and marine communications equipment.

A decision was made to use IBM's IMS DBMS when the company converted to an IBM 370/148 computer under OS/VSI in May, 1979. But when little progress had been made, it was clear that IMS was unsuited to an integrated approach.

Frustrations Recalled

Tom Lontz, Regency's director of management information systems, recalled the frustration: "How was a shop with two programmers of little data base experience supposed to make a product run that required a whole file cabinet of documentation? We were constantly swimming in a sea of words."

With the aid of its public accounting firm, Ernst & Whinney, Regency did extensive evaluations of DBMS packages that promised ease-of-use, processing efficiency and integrated facilities. Ernst & Whinney insisted on a fourth criterion: availability of a data dictionary with the DBMS.

The data base consultants recommended two finalists, and, after presentations by the competing firms, Regency selected Cullinane Database Systems, Inc.'s IDMS. "Based on our understanding of the products and their capabilities, we believed we would be more successful and in a better support position with Cullinane," Lontz said.

For Arthur Strahla, vice-president of finance and the man responsible for making the decision to go with IDMS, the dictionary was the clincher. "I'm no data processing expert," Strahla acknowledged, "but what convinced me of Cullinane's superiority was the Integrated Data Dictionary [IDD] and what it would mean for us down the road, as a way to automatically document everything we do in data processing."

The final decision was made at the end of August, and by mid-September IDMS was installed. "We had one manual and an 'Introduction to IDMS' course here on-site that lasted less than two days; that was the sum total of our education," said Lontz. "Three weeks later on Oct. 10, we went into production with our first applications, using 15 record types and 87 Cobol programs."

By December, Regency had implemented its inventory management/requirements planning applications and followed that with the accounting functions — payables, receivables and general ledger. When the firm brought up its payroll system in February 1980, every system needed to drive the corporation was operational.

Lontz describes Regency's computer operations as "centralized mode with dispersed data entry." Because it is a truly integrated system, no data entry ever has to be made twice.

Ease of Use

A corporate data base is maintained at the Indianapolis headquarters and the other divisions use minicomputers to enter their data and submit jobs remotely for execution. One data base structure, or schema, represents all their applications, including parts master, product structure master, order entry, customer master, purchase order, accounting and payroll.

IDMS ease of installation and use was expected by the people at Regency; that was why they chose it. But when they monitored performance, they couldn't believe the statistics: "We had a credit approval job that was run three times a day at 15 minutes a run under Isam; it was 30 seconds a run with IDMS," said Lontz. "We spent a week double-checking that application under IDMS because we couldn't believe the incredible reduction in execution time."

(Continued on SR/12)

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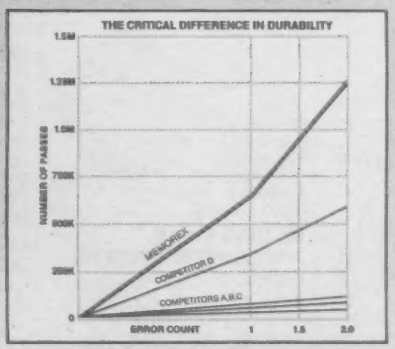

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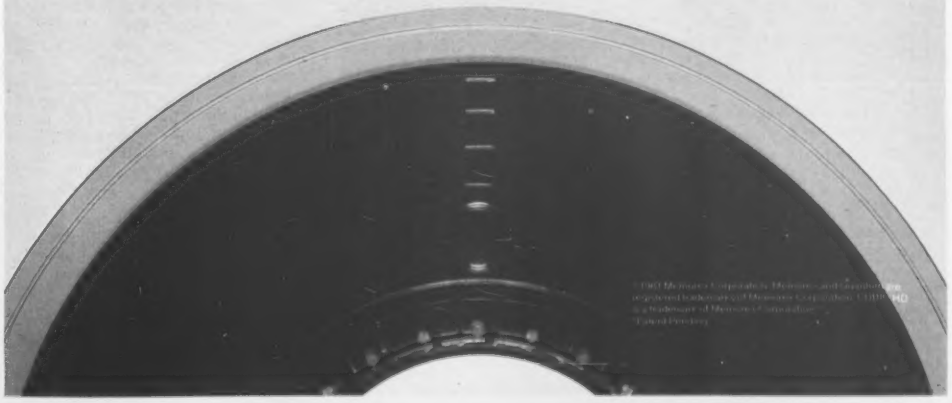

DBMS, Data Dictionary Aid System Upgrade

(Continued from SR/11)

Processing efficiency was also demonstrated in other ways. Regency runs all on-line activity (15 terminals under Altergo Products, Inc. Shadow teleprocessing monitor) through IDMS, and there are always at least three batch jobs running concurrent with the on-line activity. Yet response time has remained consistently at a half second, Lontz said.

But it is as a productivity tool that IDMS has proved most beneficial to Regency. It has gone from a company with two divisions and $35 million in sales to its present status with virtually the same DP staff. The only addition has been a data entry clerk/operator. Lontz says that his department has been able to keep pace with the company's outstanding growth specifically because of IDMS.

Freed from such considerations as file reorganization and keeping track of record pointers, Lontz is able to push far more production through the computer room and the effects of this productivity are felt throughout all user departments.

Greater Productivity Achieved

Credit manager Bill Atkins noted that before the accounting functions went on-line in February 1980, he had planned to hire three people for various manual tasks. Now his staff is far more productive even with a greater work load — a new division added 3,000 customers to its file — and the only addition to his staff was someone to fill in for breaks, illness and vacations.

"My collections personnel used to spend as long as five hours a day on credit approvals alone," Atkins said. "That now takes as little as an hour, with the rest of the time devoted to collection calls."

Atkins sees the greatest impact, however, on improved customer relations resulting from more quickly established credit releases, which allow them to ship orders to customers a week earlier.

For purchasing manager Nolyn Taylor, it's a matter of being able to approach Tom Lontz with a request and know that it will be implemented. It might be a simple thing like providing a daily total of purchase order activity or something more sophisticated, like a parts-shortage list, by which "Tom brought me 60 days of expediting time that I didn't have before," according to Taylor.

Paper-Handling Reduced

By entering purchase and change orders on-line, Taylor expected to reduce paper handling in his department by at least a third. He, too, has been able to use the same size staff for an increased work load because the system under IDMS enables his people to do "smarter work," he said.

In Lontz's words, "we no longer fear end-user requests now that we know how easy it is to manipulate the data." He also added a footnote on IDMS reliability, touting its automatic recovery facility.

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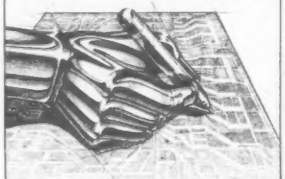

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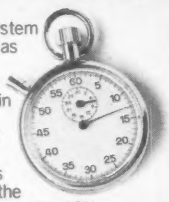

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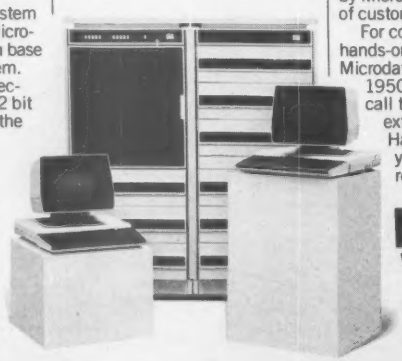

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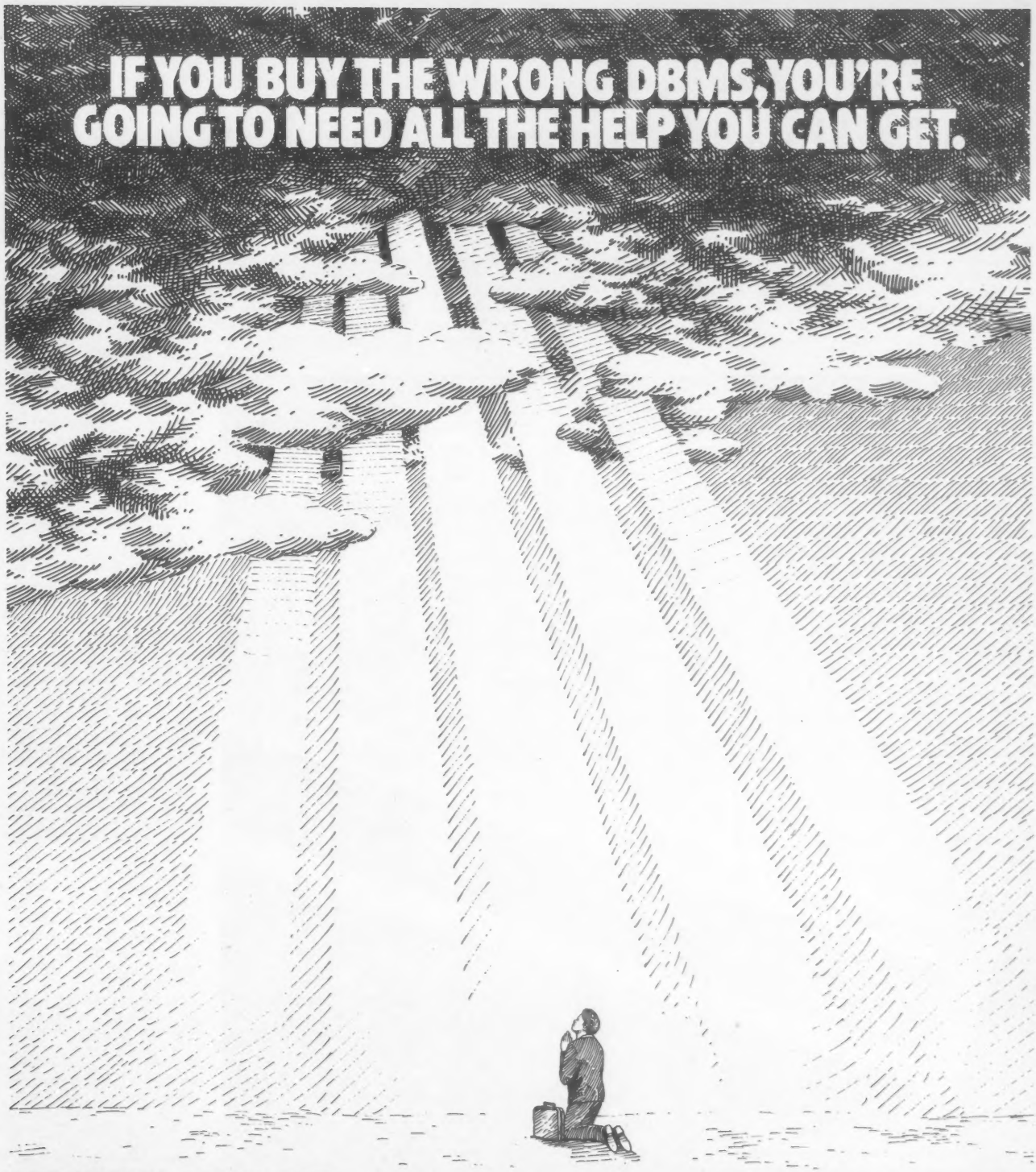

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Vanilla Time-Sharing Still a Tasty Favorite

By Ed Adams
Special to CW‡

Vanilla time-sharing is still a strong-selling favorite among a wide base of business computer users.

In the beginning, all time-sharing was essentially vanilla: raw computer power that users programmed and customized to fit their particular information needs.

Then value-added time-sharing — interactive software designed to solve specific information problems — evolved from vanilla. Nearly every computer services firm in the industry now offers a menu of value-added computer solutions.

However, those products are no longer delivered solely through time-sharing. In-house software packages, minicomputers and microcomputers now provide users with alternate processing choices.

The same features that caused the evolution of value-added time-sharing continue to make it a strong marketplace contender. It frees some clients from the burden of maintaining and staffing a hardware plant.

It gives clients access to programming talent they might otherwise be unable to afford. It provides individualized attention to clients who compete with other user groups for internal processing power and service.

New and Old Reasons

Vanilla time-sharing is holding its own, too — for some new and old reasons. First, the new. The advent of mini and micro systems has provided a bonus market to vanilla time-sharing suppliers. Vanilla vendors give small systems users extra processing power, extra storage capacity and networks for tying together several small systems. Thus, vanilla vendors are building a new market area as "power boosters."

This power pack niche is no small corner.

Now for the old reasons. As the use of computers increases in general, the place of vanilla services will increase proportionately. There will always be a market among computer users who want to run highly specialized applications that are not served in the value-added market. Likewise, there will be a market among users who process large-scale, repetitive production jobs that don't require the expertise and cost of value-added computing.

And there will always be a market among users who need big power and big capacity, but who don't wish to pay the cost of maintaining extra hardware, extra software personnel and other value-added services.

Finally, there will always be a market among resellers: users who buy time to develop specific software applications that they can then resell to specific markets.

To be sure, the seller of vanilla services today confronts a fluctuating, project-oriented market. But a reputation of reliability and cost-effectiveness can go a long way toward helping such firms build long-term relationships with customers.

Adams is president of Comshare CRC in Chicago.

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Of Presenting Vendor Courses

Consortium Training Lets Firms Share the Cost

By Joseph E. Wehr Jr.
Special to CW‡

Until recently, companies had only two means of satisfying their data processing training requirements with vendor-supplied, instructor-led courses. These alternatives were the presentation of courses in-house or attendees at public seminars.

The in-house approach was very cost-effective where a company had 10 to 15 individuals to train at one time. The public seminar approach, which often costs three times that of an in-house offering on a per student basis, was the only avenue available to a company that only had a limited number of individuals to be trained at one time.

Now there is a third alternative — consortium training offered through regional training groups.

Definition Given

Consortium training is defined as a regional training group contracting for presentation of a vendor course and the companies belonging to the training group enrolling students and proportionally sharing the cost.

Consortium training provides the member organizations of the training group with the opportunity to provide training on a timely basis when it is most needed and will be most effective, in a local setting and at significantly reduced costs equal to or less than those costs historically associated with in-house training.

These three benefits — reduced costs, timeliness and a local setting — have made consortium training an increasingly popular vehicle for the presentation of vendor-supplied DP training courses.

Reduced Costs

Consortium training provides the opportunity to obtain vendor-provided training at a cost comparable to or less than an in-house course.

In most cases the per-student cost associated with the consortium offering is less than one-third the cost associated with a public offering. This dramatic savings is because the tuition on a per-student basis, associated with a public offering, can be as much as double that associated with an in-house offering.

Also, because the consortium course is offered locally, the cost associated with travel to public seminars is eliminated. With the escalating costs of air fare and hotel accommodations, it is not uncommon for travel expenses associated with a public seminar to equal or exceed the tuition cost itself.

In many cases, the per-student cost of a consortium offering is less than the cost associated with an in-house offering. This is because there are usually more attendees over which to spread the costs at a consortium offering than there are at a typical in-house class.

Many organizations will offer an in-house class where they have less than a full complement because this reduced number still provides significant cost savings over attending a public offering. Yet when the course is offered on a consortium basis the possibility of offering a full class is greatly enhanced and thus the cost is split over a greater number of students.

Several Offerings

The second major benefit of consortium training is that a particular course can be offered several times over the period of a year.

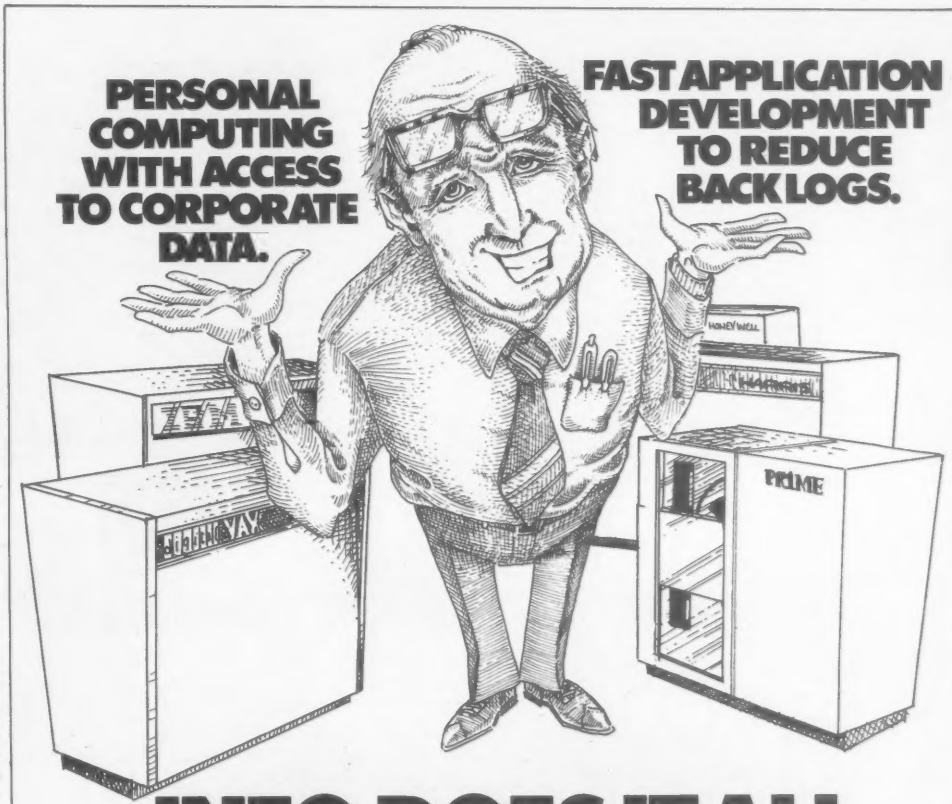
This feature enables companies to send to each offering only those students who need the training at that time. This is of benefit to not only smaller installations but also larger installations.

Before consortium-based training, many larger installations that would have sufficient numbers for one in-house offering during a year were forced to schedule a class where the timing was right for some of the attendees, but too early or too late for others.

Unfortunately, this led to people developing applications before they were properly trained or the diminishing of the benefit of the training because the attendees were not able to use the course material immediately after the class.

Consortium offerings are scheduled based upon the results of a needs analysis survey among the members of the training group. This enables courses to be scheduled at the time when they are actually needed and will be most effective. This also greatly reduces the dependence upon the availability and schedule of publicly offered seminars.

(Continued on Page SR/18)



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INFO is the least expensive alternative. With INFO, you can turn any terminal into a personal computer, allow users to "do it themselves," and double your staff without adding a person. And if you have a DEC VAX, PDP/11, Prime, Harris, IBM VM/CMS or Honeywell DPS 6 system, INFO is ready to go to work for you.

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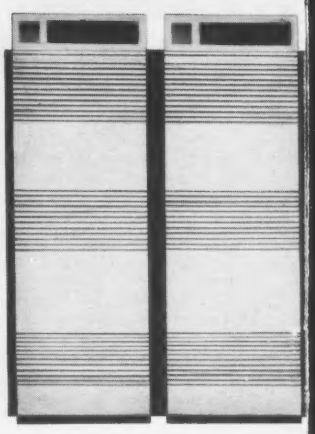
Executives in more than 600 companies have already found that INFO makes their job a lot easier.

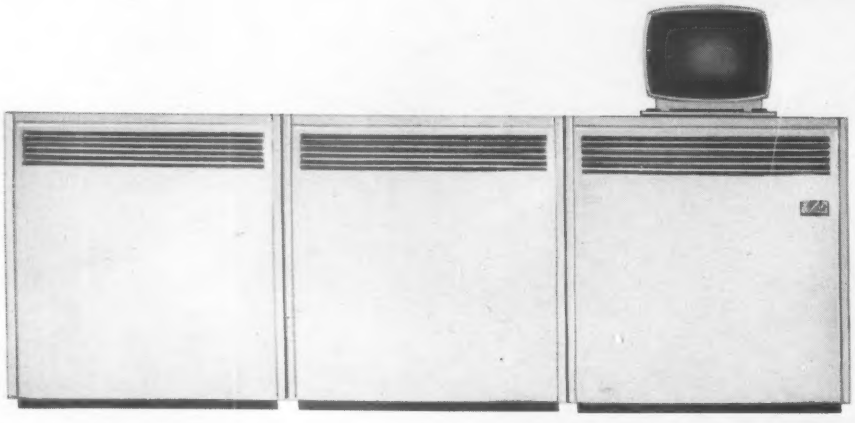
Why not see if INFO can do it for you. Call or write Henco Software, Inc., 100 Fifth Avenue, Waltham, MA 02154 (617) 890-8670, (TWX: 710 324 7701)

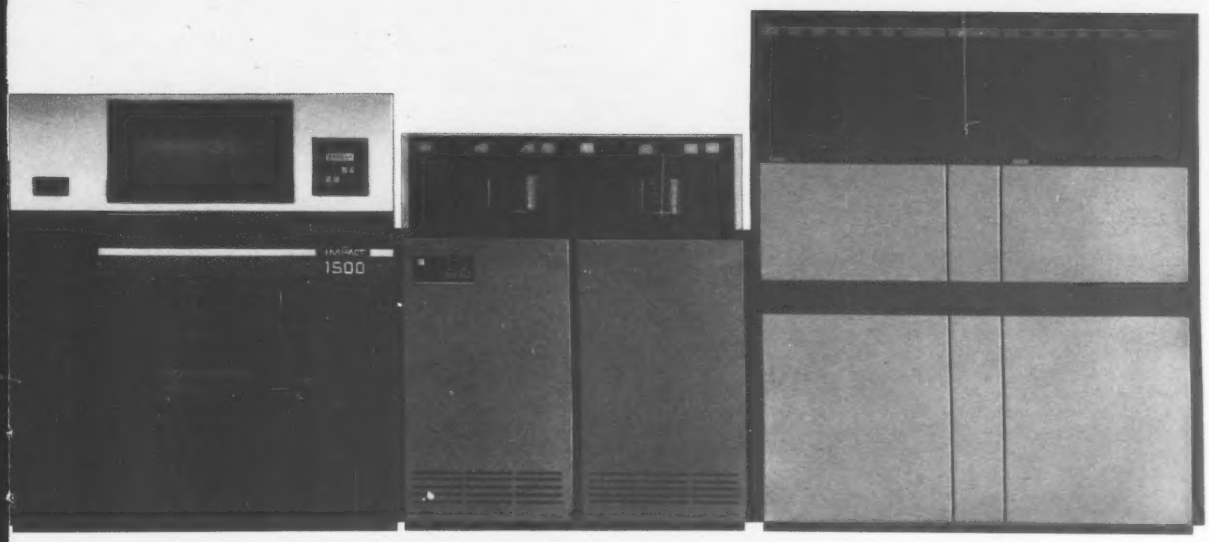
HENCO SOFTWARE

WHICH IS FASTER,

A 4300 CPU OR STC PERIPHERALS?







YES!

It's a win-win proposition. Your 4300 CPU will run faster when attached to STC disk, tape, and printer subsystems. That's because STC's intermediate-system peripherals offer advanced-technology features and functions that simply are not available on your present equipment.

For example, you may choose CKD or FBA disk subsystems with dual-port and high-speed actuators to speed I/O response.

You may choose a family of dual- or tri-density tape subsystems to speed sequential processing and to slash time and manpower from backup/recovery cycles.

You may choose a family of microprocessor-controlled printers with the combination of speed and print quality to meet your objectives.

Each of these subsystems is designed to meet the special requirements of the intermediate-system environment. And each shares the heritage of performance, reliability and worldwide service that has made STC the industry leader in large-system I/O.

If you're interested in improving the price performance of your 4300 system, contact your local STC Marketing Representative for more details. Or call Storage Technology Corporation, 2270 So. 88th Street, Louisville, CO 80027. Phone (303) 673-4063.

Storage Technology Corporation

Despite High Hourly Rate

Smart Shoppers May Find Consultants a Bargain

By Robin F. Goldsmith
Special to CW‡

When considering how to get more DP for the dollar, users may find outside consultants to be surprisingly economical. This is surprising mainly because many people believe consultants' hourly rates are very high.

To be sure, consultants' rates are high for some situations, but they also can be a real bargain for those who understand how and when to use them.

The wide use of consultants by profit-motivated, cost-conscious business is strong evidence that consultants in fact are economical.

Economy is only part of using consultants effectively, a broader topic than can be covered fully here. However, both economy and effectiveness require an appreciation of the types of consultants and consulting relationships.

In general, a consultant is simply a nonemployee who agrees contractually to perform a service for a client. The service may be defined in terms of level of effort or as a specified deliverable product. Consultants are paid by the hour, fixed fee, contingency or some combination.

There are two major types of consultants, which are distinguished by the extent of the consultant's management control over the consulting activity, which in turn determines the consultant's professional responsibility for it.

One type of consultant is, in effect, a contract employee. Many of these are on their own or working through agents. They usually function in a manner similar to regular employees and report to the client's management.

Thus, the client contracts mainly for a level of effort and assumes primary responsibility for results.

In contrast, the traditional consultant works with the client, often as an advisor, but is not subject to the client's direct management control.

Consequently, the consultant provides both services and professional responsibility for results.

Although self-employed consultants can serve in this capacity, assuming such responsibility often requires the resources of a larger organization. The larger consulting firms almost always function in the traditional role.

By understanding how these factors interact with client needs, one can use consultants economically:

- When their cost actually is lower than for internal staff to perform the same function.
- When they perform services that cannot be achieved with internal staff.

Actual Costs

The real surprise for many employers comes when they calculate the true hourly cost of an employee's productive time. An employee costs a lot more than just annual salary.

The employer also pays for social security taxes, health and life insurance, pension and other fringe benefits. Additional direct expenditures include outside education, a company car, memberships and publications.

Indirect employment costs include a portion of total spending on personnel administration, hiring activities, company newsletters, company cafeterias, libraries, supplies, liability insurance, parking spaces, supervision and facilities.

Moreover, there is an intangible cost associated with the employment commitment or, conversely, with a reputation for not being committed to employees.

Besides costing more than is often recognized, employees tend to be productive for fewer hours than for which they are paid.

For example, employees are paid but unproductive during vacations, illnesses, holidays, education and

(Continued on Page SR/20)

Consortium Training a Better Alternative

(Continued from Page SR/15)

The third benefit of consortium training is that courses are offered locally.

In addition to the significant travel cost savings noted above, this benefit eliminates the inconvenience and lost work time associated with traveling to public seminars. It also enables individuals in many cases to attend courses away from their normal working environments.

This addresses a problem associated with in-house offerings where individuals attending a course, because they are accessible, often are interrupted and removed from class to address problems or attend meetings that occur during the class.

Normally a consortium offering is hosted by one of the member companies of the regional training group. Even in the case where a company is hosting an offering, the probability that its employees will be removed or interrupted during the class is greatly diminished because of the presence of individuals from outside companies.

Another benefit of the local setting is that by bringing together individuals from local companies there is an increased awareness on the part of attendees of what other companies in the area are doing.

This leads to an effective exchange of ideas both during and, in many cases, after the class, which is of significant benefit to both the attendees and the companies they work for.

Other Benefits

In addition to the major benefits indicated above, a successful consortium training program is often a catalyst to a successful regional training group.

Such a program provides a definitive economic benefit to the existence and operation of the regional training group. It shows that by working together as a group, all the members can benefit.

The normal sequence of events is that it takes several dedicated individuals within the training group to make the initial consortium offerings successful, but as soon as the other members are able to participate in consortium offerings and see the benefits firsthand, they are quick to participate and contribute to the future success of consortium offerings.

Another benefit of consortium training is that the regional training group, having determined all the members' education needs by means of a needs analysis survey, can contract with the vendors they want to teach particular courses. They can establish relationships with vendors that will guarantee a high level of quality and consistency in the courses. It avoids the problem of individuals within a particular organization taking the same course from different vendors and often, as a result, not having the same level of training in a particular subject.

Also, vendors tend to be very responsive when dealing with a regional training group on a consortium basis because they are providing training to many clients to which they normally would not be exposed.

Consortium training can generate significantly increased revenues for a vendor in a particular geographical area beyond that which would normally be possible.

The needs analysis survey is very important in that it enables the entire group to determine their joint needs and to schedule consortium offerings that will benefit all the members.

Many regional training groups offer a form of consortium training where a company schedules an in-house course and opens the course to member organizations whenever there are empty seats.

This is not as effective as scheduling courses based upon the needs analysis survey because what is being satisfied is not primarily the training requirements of all the members, but rather the reduction of cost to the one company who has scheduled an in-house course.

In some cases this does work, but those regional training groups that have truly successful consortium programs are those that plan courses based upon a needs analysis survey. This needs analysis survey should be aimed at determining the schedule of consortium training offerings for the next six to 12 months. The survey and schedule of courses should be refined every six months to respond to constantly changing requirements.

Wehr is vice-president of Data Base Management, Inc. in Vernon, Conn., which provides both in-house and public seminar training.

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Implement your standards quickly and inexpensively.

Our IMS and CICS Standards packages allow you to avoid the time consuming and costly delays typically encountered when developing your own data base and data communication standards. Based on our experience with several clients, your standards can now be developed within just eight weeks and for approximately 20% of the cost of doing it on your own. Plus, our Standards packages enable you to implement your applications in a standardized, consistent fashion.

Our Standards packages include a comprehensive manual tailored to your individual environment and cover the full spectrum of application development from design to programming and implementation.

At DBMI, we understand the problems and frustrations of dealing with data base/data communication technologies. Since our inception in 1973, we've specialized in the design and development of a variety of distributed, on-line data base systems for clients in many different industry groups.

For more information, please call Jim Walton at (203) 646-3264.

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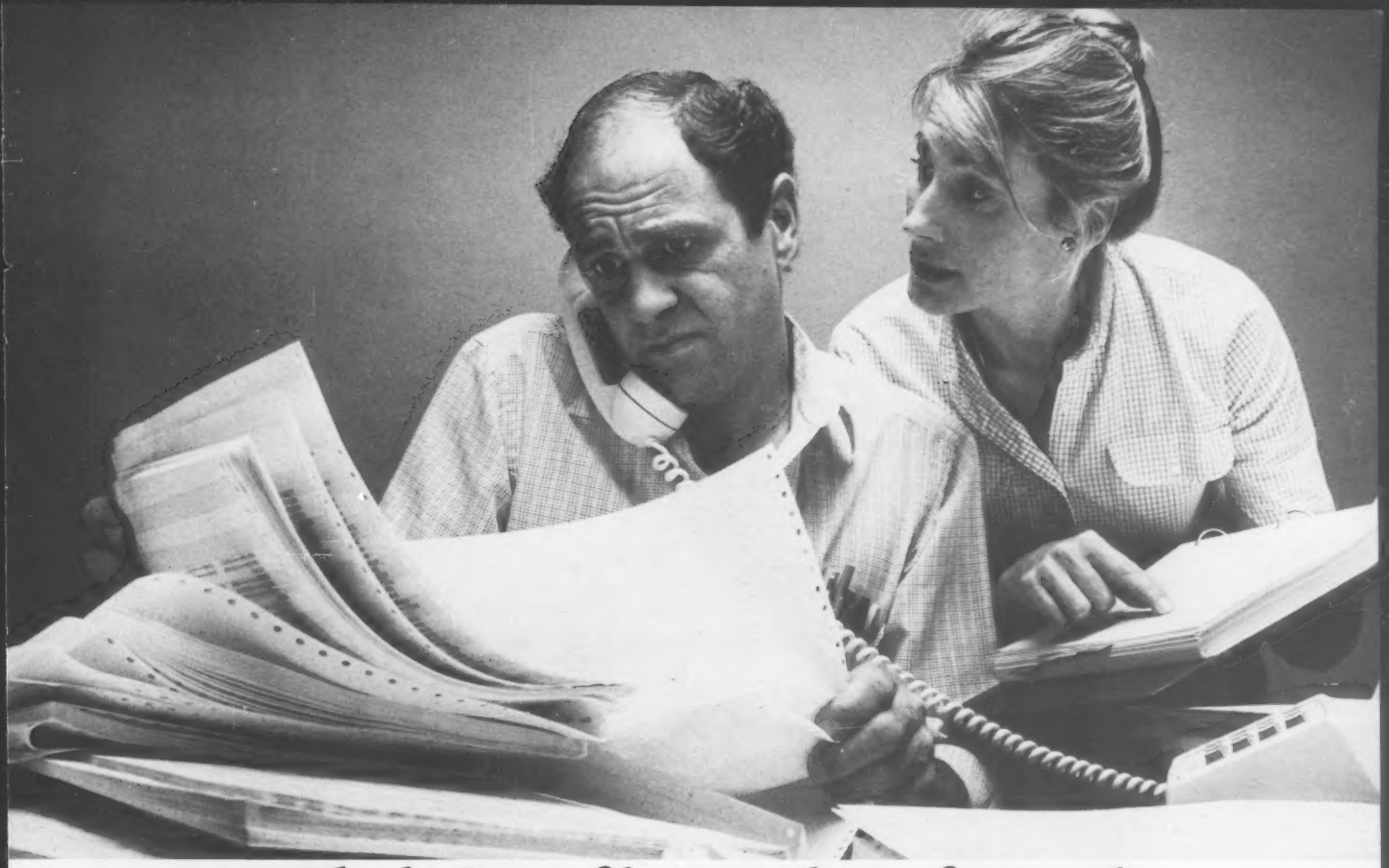

Oh, the joys of being a dp professional.

It's always been easy to tell when a job runs wrong. But it's never been an easy task to find out how to put it right.

You can waste countless hours trying to find the answer; searching through out-dated run books and other documentation.

And all the while you're looking, the clock is ticking.

The schedule goes out the window. Your operating costs go up again. Unhappy users get fed up with waiting and start calling. And your staff gets frustrated putting out fires.

All because there's never been a cost-effective program to help you manage production failures.

Until now.

The solution's in sight

Triangle Software's new ProDict™ program will help you manage all the complexities of Production System Management faster, easier, better than you ever thought possible.

It's made possible because our ProDict program is an active, automatic, on-line dictionary of all your production jobs, data sets and programs.

Input to ProDict software is automatic, from JCL at production turnover time. And the output is accurate production documentation—on-line or hard copy—better scheduling, reliable contingency planning, and faster disaster recovery.

Cut costs in half in just half-an-hour

The ProDict software package is easy to use. With no more than 30 minutes effort, you can have it working for you, because it requires no changes to the standard JCL you're working with now.

Our ProDict program can save you countless manhours, even mandays, now wasted manually searching listings to validate a change to a job or a data set. It can halve your costs of production system maintenance. And it will give you concise, up-to-the-instant, accurate information to make decisions your company can depend on.

Improve productivity with ProDict software now

For all the information about all that our ProDict program can do for you, call or write us, right now.

We truly understand your problems, and we are intent on helping you solve them.

We welcome the opportunity to get you doing exactly what our other customers are doing: Jumping for joy.

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Consultant Seen Bargain for Smart Shopper

(Continued from Page SR/18)

training, administrative activities and when unassigned.

Employee time spent on a project that is overdue or overbudgeted is essentially nonproductive. Furthermore, employers have limited options for increasing an individual employee's work output or quality.

Consultant-Bound

On the other hand, the consultant can be bound contractually to a level of service and results, even to the point of protecting against the costs of overdue and overbudgeted projects.

The client has greater assurances of workers with experience and skills necessary for higher work output and quality. Even at higher rates, the total cost for a project can be lower.

Based on the unexpectedly higher costs and lower productive hours, a simple calculation shows how expensive a full-time employee's time really can be.

Thus, for many types of assignments, irrespective of the qualitative factors discussed below, it can be cheaper to use a consultant than a full-time employee. This is especially true for filling temporary situations, where the cost of keeping the worker employed afterward could be excessive.

Furthermore, in many instances employers literally cannot find employees at available salaries to perform certain types of work. By definition, a consultant who performs such necessary work is less expensive than an employee.

Service Benefits

Most people recognize the value of an expert's services and accept the fact that they cost more. The greater the expertise required, the higher a premium that must be paid.

The principle is the same regardless of whether the extra payment is for expert services of physicians, attorneys, accountants, architects, hairdressers, plumbers, athletes or consultants.

Besides the likelihood of faster or higher quality work, experts are needed to perform functions that cannot be performed by persons without the requisite expertise.

Frequently, an expert is called upon to understand situations and make judgments on which courses of action can be reliably based.

The expert's value is directly related to the costs and expected benefits that are risked on the basis of the judgments.

While most people think that consultants are supposed to be "experts," actual experiences with consultants often suggest differently.

The consultant may seem to lack expertise or the situation may not even seem to require any special expertise.

Informed Objectivity

These can be troublesome circumstances, especially where the consultant appears to be judging employees, even those who in fact may be experts themselves.

What is often hard to recognize, but that must be understood to use consultants effectively, is that expertise per se is not always the consultant's main service. Rather, the greatest value of a consultant often is informed objectivity.

Effective managers know that most people's views and good ideas, including their own, are influenced by emotional and personal interests.

Impartial Judge

All employees, even the experts, tend to present and promote ideas that benefit themselves. Consequently, managers need assurances that their judgments are reasonable.

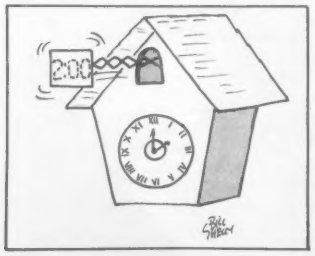
Reasonableness comes most reliably from impartial, informed analysis. Sometimes a fresh look is needed for the proper perspective.

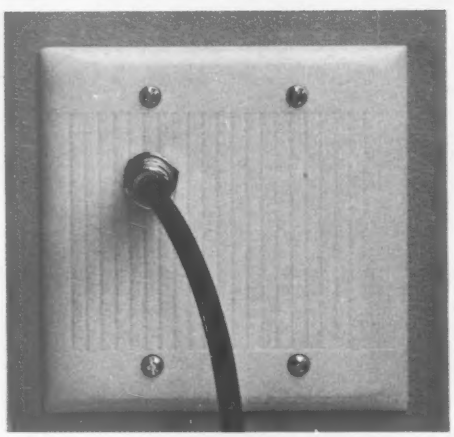
Such independent assurances of reasonableness can be as valuable as the expert's judgments for reducing the economic risks associated with a course of action.

The value is even greater when the impartial observer is also an expert.

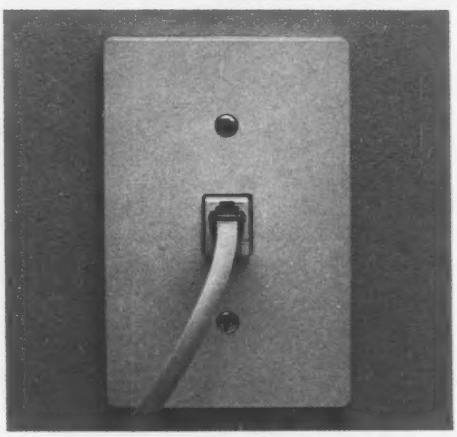
Only an outsider — a consultant — can provide the necessary informed objectivity. By definition, this is a service that one's own employees cannot perform.

Goldsmith, an attorney, has been a consultant for more than half of his 16 years in data processing. He is a senior consultant for Data Architects, Inc., Waltham, Mass.





Local coaxial network



Advanced digital PBX

The right way to
integrate office systems is both ways.
And only Datapoint offers both.

How to Go About the Process

Automating Can Save Small Firms Big Money

By Henry J. Klayman
Special to CW‡

Many small businesses (those with a sales volume of $1 million to $10 million) are coming face to face with the computer revolution and finding themselves unarmed to deal with it.

The typical profile is a family-owned business with 15 to 25 employees, none of whom has any exposure to computers other than at his bank, a local retail store or perhaps through bills provided by an automated billing system that he receives each month.

So, how is the unsophisticated potential computer user to decide if he needs a computer — let alone design, purchase and operate the system?

Common symptoms that indicate there might be benefits to automating are:

- Duplicating information for multiple purposes.
- Spending significant amounts of time retrieving and/or filing paper documents.
- Not producing required reports on a timely basis.
- Not knowing desired information until tedious repetitive calculations are performed.

So, what should one do if one has these symptoms? Often, unless the company's personnel really study the market and their needs thoroughly, an outside consulting firm is hired to make a proposal on what to do. These outside consultants include:

- Data processing companies providing specific products (some masquerade as "consultants").
- Independent professional consultants.
- Certified Public Accountants.
- Lawyers.

Some of the alternatives to be considered are time-sharing, service bureaus, purchasing a computer system or some combination of these alternatives.

Request for Proposal

If acquiring automated products and services makes sense from a cost/benefit perspective and the organization can support the system, then the consultant will gather detailed information about how a company does business and incorporate the information into a Request for Proposal (RFP).

Feasibility for a new computer system is based on how the organization is structured, the internal controls, the staff's basic understanding of its tasks and the support of management.

The RFP should include a narrative description of the business, a description of the current system, a description of the proposed system including data dictionary, transaction volume estimates, acceptance criteria, proposal requirements, proposal evaluation criteria and exhibits of key sample documents and proposed reports.

The RFP is then issued to a group of vendors, perhaps three to eight, that the consultant thinks are appropriate for the particular requirements of the business. From the vendors that have received the proposal, some will choose not to respond, some will have inadequate responses and some will clearly be out of the acceptable price range.

These are discarded quickly. For the conscientious responses, references and rough designs are analyzed, hardware and software are compared, system expandability is considered and the amount of custom modification estimated. In many cases, the number of programming hours of custom modification or conversion is the largest unknown and therefore the greatest risk.

The number of man-hours involved in custom modification or conversion depends upon several factors: the completeness and accuracy of detailed specifications given to programmers from which to program; the project management system used by the system developers to identify and correct problems; the availability of computer time for testing; the availability and degree of involvement of key client personnel; the average skill level of programmers throughout the project; and the average number of projects that each programmer is working on simultaneously.

Of these factors, one that is easily controllable and can have a great effect on a project's success is the completeness and accuracy of detailed specifications given to programmers from which to program.

There is one straightforward way to manage this kind of uncertainty, although additional negotiation is re-

(Continued on SR/22)

When you plan your company's "office of the future," you're faced with a dilemma. The two most basic methods for tying office information devices together — the local network and the advanced voice/data PBX — both have pluses and minuses.

The local network uses coax cabling and gives you all the speed and power that heavy DP and WP users need. It's efficient, but the cost per user can be relatively high.

The advanced PBX is a less expensive way to connect information users, *but* it's not quite as fast as coax which may be a drawback for heavy users.

To really meet the needs of all your people, you need *both*, and only Datapoint offers a coax local network *and* an advanced PBX that work together.

Now you can have both

With Datapoint, you can connect each user workstation via the system that suits him best; heavy users via the local network, lighter users via the PBX. The local network and the PBX are completely compatible, so every user can still reach any information or other user no matter how he is connected.

The local network and PBX can form one totally integrated system, or stand alone. You can start with whichever system you need now, and add the other later.

The local network and advanced digital PBX are both building blocks within the Datapoint Integrated Electronic Office™ or IEO. They are the communications pathways that let you fully integrate data processing, word processing, electronic message service, telecommunications, color business graphics, intelligent printing, and facsimile. Only Datapoint offers all these capabilities in a completely integrated, easy-to-use information system.

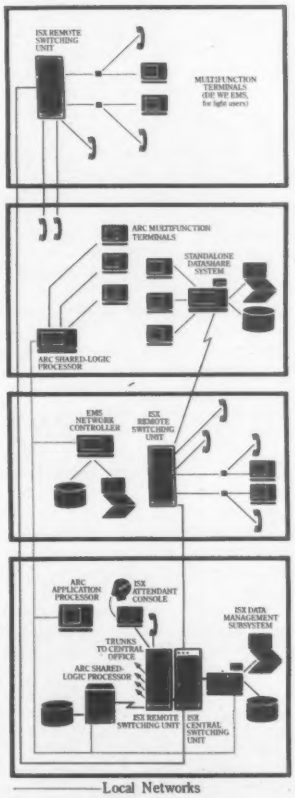
ARC™–the most widely used local network

The local network portion of the IEO is the Datapoint Attached Resource Computer® or ARC.

With ARC, Datapoint introduced the concept of local networking more than four years ago. Today there are more than 2,000 ARC systems installed worldwide, more than all other local networks combined.

With ARC, workstations, printers, processors, and files are linked together so all resources are available to all users.

You can expand the ARC network in small, inexpensive increments by simply adding more workstations, printers, disk storage, and so forth. Each multifunction workstation can perform word processing, data processing, and electronic message service. And while you expand, you never have to divide up the common, integrated database. Every user can access all the information, except where you impose security controls.



No matter how far you expand your ARC system, you continue to get fast response at every workstation because you can add processing *power* as you expand.

An information switch for the price of a phone switch

The PBX portion of the IEO is the Datapoint Information Switching Exchange or ISX.™ It's an advanced digital PBX that not only connects telephone extensions, but makes connections between computers, word processors, and other digital business machines. It even will let your multiple Datapoint local networks talk to each other quickly and easily.

The ISX gives your lighter data processing users the connections they need to send and receive information, and can tie them into the higher speed ARC network when necessary.

The ISX costs no more than an ordinary voice-only PBX. The building wiring is ordinary telephone wire. So the next time your company needs PBX equipment, you could install the Datapoint ISX instead and lay a foundation for office systems integration without spending any additional money.

You can expand the ISX up to 20,000 ports without ever replacing equipment. It's a fully digital, programmable system that allows you to move extensions and change phone features yourself using simple English-language commands.

The ISX also provides powerful features like a least-cost routing system for long-distance traffic that can slash your phone bills up to 40%.

The most sensible, practical path to office automation

Only Datapoint offers *both* basic methods for integrating office systems. And only Datapoint makes complete computer, word processing, and telephone systems that work together.

The systems in the Datapoint IEO were designed from the very beginning to work together, so you get expandability, flexibility, and compatibility that you probably can't get with a combination of systems from multiple manufacturers.

The Datapoint IEO isn't just a blue-sky idea. It's a working reality that companies can use right now. Let us show it to you. Write for our free brochure: A Capsule Look at Datapoint. Datapoint Corporation, Corporate Communications T41CW, 9725 Datapoint Drive, San Antonio, Texas 78284. Or call us at (512) 699-7059 for the Datapoint sales office nearest you.

DATAPOINT

SYSTEMS THAT WORK TOGETHER NOW

A Cost-Effective Alternative

Heard About Video Software Documentation?

By William R. Feeney
Special to CW‡

Pssssst.
Hey, buddy.
Want some software documentation cheap?

Have you ever wished someone would make you an offer like that?

For those who have had to pay for producing documentation, anyone offering inexpensive documentation may seem on a par with someone selling bargain watches in an alley.

There is, however, a new approach to detailed documentation of specific software packages using video that is proving not only less expensive but is providing other major advantages not found in more traditional written software documentation.

Video software documentation (VSD) is an alternate form of detailed documentation (down to — and including — the program listing level) for large systems.

The idea was conceived and developed at San Diego State University to assist in documenting a $500,000 software system.

The essential difference between VSD and written documentation is that the video version is primarily spoken and pictorial, whereas the written is textual with diagrams.

Because video permits much faster collection of information about the software, significant amounts of time and money have been saved during this approach.

Furthermore, programmers and others who use the documentation find the video medium is easier to use and is more lively to watch than traditional systems manuals.

'There is . . . a new approach to detailed documentation of specific software packages using video that is proving not only less expensive but is also providing major advantages not found in more traditional written software documentation.'

Using video to present detailed information at the listing level about a specific software product is the novelty of the VSD approach.

A finished set of video documentation consists of:

- Video tapes, the same size as video movie cartridges.
- A notebook containing a detailed table of contents that indexes the structured segments on the tapes.
- Paper copies of all the graphics that appear in the video documentation, put in the order of appearance on the video tapes.
- A written overview of the system explaining the features, characteristics and general functions of the system.
- An explanation of how to use VSD and the playback equipment used to view the tapes.

Video software documentation is intended to be used in a manner similar to written documentation. The order of events in finding a particular portion of video documentation is as follows:

A person who requires detailed information about a system would first look in the table of contents notebook to find out on which tape, and where on that tape, the information is located. Then the person would pick the tape from the tape storage shelf and put it into a video playback unit.

Next, the person would press the "fast-forward" button to move the tape to the selected tape segment, either by using the segment identification phrases recorded periodically on the tapes, or by using a tape segment address and the playback unit's counter.

The desired segment of tape is now positioned to be viewed. It should be noted that this procedure is similar to finding information in a book of documentation using the table of contents in front of a manual and then turning pages until the desired section is found.

VSD requires the use of video equipment to play the tapes containing documentation. Either one of the two ½-in. formats, Beta or VHS, are quite satisfactory for playing back the documentation. Neither offers significant price or quality advantages over the other.

Since the formats are not compatible with each other, care should be taken to select the one that will best suit other requirements for video equipment within the organization. Three-quarter-in. U-Matic format has better picture quality than Beta or VHS but costs more than twice as much.

The video equipment required for playback is: a tape playback deck ($500-$1,500 for ½-in. format equipment), and a TV set or TV monitor ($200-$600). In addition, a portable stand with several shelves for a tape deck, TV and tape storage is desirable ($150-$250).

Development Cycle

The development cycle for VSD is similar to the cycle for written documentation. First, a structured outline is designed with the graphics necessary to illustrate the concepts to be documented. Then the members of the project team, or others who are familiar with the software, are video-taped giving explanations.

The functions of the software package being explained include: program interfaces and relationships, input CRT screen formats, output report formats, files used by and generated by the programs, logic flow within each program, explanation of the program listings and example traces of program executions.

The recorded explanations are next reviewed for accuracy and completeness by other members of the project team.

More recording is done if the review identifies inaccuracies or if more information needs to be added to a tape segment. The tape segments are then assembled into the complete series of video tapes. Finally, a table of contents of the tape segments is compiled and the graphics used in the tapes are assembled to be included with the documentation package.

We have found that VSD is less expensive to produce than a comparable amount of written documentation. It takes less project team time to produce documentation and less learning time than written documentation for people to learn new systems.

VSD provides a natural method of documentation for people. Most people find it easier to talk in detail about a subject on which they are expert than to write down the same amount of information.

Does video software documentation really work? It does for us.

If you have a need to develop comprehensive and detailed software for a sizable system that will be used by programmers other than the ones who developed it, the video approach may be for you.

Feeney is a professor in the College of Business Administration at San Diego State University.

Even Small Firms Can Save Big

(Continued from SR/21)

quired. The detailed design should be contracted with the chosen turnkey system house separately and for a fixed price before a contract is signed for the system.

It is implicitly assumed that if the detailed design is done well, a contract will be signed with the chosen turnkey system house.

A detailed design usually includes a narrative description of the overall system flow and the transactions that drive the system; a detailed system flowchart with all input documents, files, processing and output reports; estimates of processing times and schedules for all job streams; file layouts, including data field sizes and formats; report layouts and distribution; screen layouts; and data input validation and handling of errors.

By contracting separately for a detailed design of a turnkey system up front, several benefits can be derived. For instance, if a design is done poorly, a business can walk away from the turnkey system house. Also, if the turnkey system house is competent, but misinterprets some of the requirements, it will be caught at the beginning, thus minimizing inefficient programming efforts.

If a turnkey system has key personnel that the design is dependent upon, most of their expertise can be captured at the beginning of a project through the design, thus minimizing the loss if that person leaves during the project.

From personal experience with many installations, when the detailed design was done up front — separately from the signing of the contract — these projects ran much more smoothly than when this was not the case. By doing a separate detailed design up front, many of the weaknesses that spell trouble for a system project can be focused upon.

It is must cheaper to lose the few thousand dollars for a detailed design (and rarely is the exercise a total loss) than to lose the $40 to $100 and $25,000 for a computer system that does not perform as expected. And the costs of inefficiency in programming effort can be significant even if the system eventually functions as intended.

Of course, assuming that the detailed design is completed successfully to the satisfaction of client, consultant and vendor, the contract for the system must be written carefully by a skilled lawyer with the assistance of a data processing professional.

Klayman is a consultant with the Management Advisory Service Department of Veatch, Rich & Nadler, Northbrook, Ill.

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Productivity as a Microeconomic Principle

By Wayne Myers
Special to CW‡

In talking with DP managers about improving the productivity of their organizations, one learns that most don't really understand productivity, how to measure it in a DP environment or how to act to improve their current productivity.

The following brief guidelines are designed to help managers understand what might be the first steps to take to improve the service provided to their users without increasing the cost.

Productivity is a microeconomic principle. It makes most sense when applied to the activities of a single economic unit, a company, a division within a company or even a single employee.

The reason why productivity is best understood in microeconomic terms is that it can be measured only in terms of the objectives of the entity being studied, and the larger and more heterogeneous the entity is (all DP organizations, American business), the more unlikely it is that its objectives can be succinctly stated or their fulfillment accurately measured.

"Productivity" is defined as "the way in which an economic entity meets its objectives." An improvement in productivity occurs when the entity finds a better way to meet its objectives and is often measured in terms of a reduction in costs.

Measuring Productivity

You cannot even begin to deal with the productivity issue in your own DP organization until the objectives of that organization and of each system under its control have been formally stated. These objectives should be as specific as possible and, where appropriate, should be stated in quantitative terms.

It is not uncommon, for instance, for those DP shops where objectives have been formalized to find that they consist of generalities like "provide services," "support the functions" or "prepare reports for" without any exact references to which services, what functions or what reports and with virtually no quantitative standards of performance.

In virtually every case, a program to improve the productivity of a DP organization has to begin with the same three remedial steps:

- The preparation of realistic objectives for the organization.
- The enactment of a management program to meet those objectives.
- The taking of preliminary productivity measurements so that the efforts to improve productivity can be evaluated.

This often requires the use of a consultant who has the expertise to guide management through these first three steps and who can bring to the process some sorely needed objectivity and tough-mindedness.

There are only three strategies that you will be able to employ to improve the productivity of your DP organization, though there are numerous tactics (dictated often by your particular situation) to be used for each of the three. The three ways to improve productivity are:

- To increase output without increasing input.
- To decrease input without affecting output.
- To decrease input while increasing output.

One should begin a program for productivity improvement by carefully evaluating the functioning of the DP organization and by developing a number of tactical programs to be employed to improve that functioning.

The next step is to group those tactics according to the three strategies for productivity improvement and to decide which strategy to employ first.

It is best to employ only one strategy at a time and to switch strategies whenever the measurements being taken indicate that the rate of increase in productivity has leveled off.

Examples of Tactics

As examples of the many possible tactics for the DP manager, consider the following:

- To increase output without increasing input he could institute a program to make screens and reports user-friendly and easier to understand.
- To decrease input without affecting output he could document all systems and store the documentation in such a way that programmers can readily locate the likely source of any processing problems and can more readily modify the code successfully.
- To decrease input while simultaneously increasing output he could institute a structured design methodology tailored to the needs of his organization and enforce its requirements.

Myers is a staff consultant for Omega Systems in Pittsburgh, Pa.

Information Officer to Bridge: 'Get Me Spock'

By Walter Ulrich
Special to CW‡

The chief information officer (CIO) of a company is a lot like Captain Kirk of *Star Trek*. Like Kirk, the CIO must chart a course through a fast-moving and sometimes exotic universe. Like Kirk, he commands a broad array of resources. Unlike Kirk, however, there are real-world problems such as failed missions, dissatisfied crews and lost opportunities.

What elements are missing? Our earth-bound Kirks do not have a Spock standing behind them. Spock of *Star Trek* is a steady and dispassionate hand. Spock is analytical and objective. He searches out information when needed and evaluates the strengths and weaknesses of the options open to Kirk. When danger nears, Spock is never afraid to appraise the risks and alternatives and to inform his captain.

Just imagine the benefits of having Spock around. Plans and opportunities can be carefully reviewed. Decisions can be given a fresh look. Special expertise is available when needed. New approaches and new methods are suggested where appropriate. The current situation is assessed, and problems are corrected before they get out of hand.

My friends, Spock lives! The very role that Spock plays for Kirk, management consulting firms play for executives. They bring with them special expertise and have ready access to a wide variety of industry information. They are calm in the face of trouble, and they can help make an operation more productive, more effective and more successful.

Management consultants are not often used by DP executives. They are an untapped resource in the information management industry. Business people in other fields establish close relationships with consultants.

Sharp executives in finance, marketing and general management see the value of and are using outside consultants. They see them as sources of strength. They know the importance of establishing a good working relationship with one or two management consultants.

These executives use consultants in the same way they use other advisors — accountants, lawyers and doctors. Consequently, over time, trust between the consultant and the client builds, and the consultant gains a good understanding of his client's situation so that he can move quickly and decisively, reacting to the client's changing needs. The consultant can ask the difficult question and suggest the unpopular alternatives.

How to Pick a Consultant

Picking a consultant is no easy task. In our industry, the problem is compounded by many people masquerading as management consultants. The kind of consultant we are talking about sells only one thing — advice. The firm's only source of revenues should be its professional fees. Vendors of hardware, software, timesharing and contract programming services cannot be considered objective management consultants by this definition. They have a vested interest — something else to sell — in any recommendation they make. In picking a consultant, here are some points to be aware of:

- Look for true objectivity.
- Be careful of internal sources. Some people question using auditors as management consultants. If they have participated in a management recommendation, then how can they be expected to audit it objectively later on?
- Select the consulting firm yourself. Most executives feel uncomfortable using a consultant that has close ties with their superiors. A healthy client/consultant relationship requires great mutual trust.
- Assess the return on investment. Good management consulting firms return a value from 10 to 100 times their fees.

For information executives who have not used these firms, they can be brought in relatively quickly. The benefits of their advice and expertise include improved planning, higher productivity and better results. Problem areas can be addressed and resolved dispassionately. A good consultant reflects well on the CIO.

Properly selected, a management consulting firm will help you and your company be more prosperous and more successful.

Kirk to Spock — Mission Complete — Thank You.

The Spocks of the information industry are scarce. Lacking pointed ears, they are more difficult to identify. There are some excellent consulting firms, and their best consultants are worth their weight in gold. Seek them out. It is a great comfort to know that next time the Klingon Empire invades, Spock will be at his station.

Ulrich is president of Walter E. Ulrich Consulting, Houston, Texas.

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Puts Responsibility on User

System Life Cycle: A Tool for Controlling Projects

By William H. Goodwin
Special to CW‡

The current need to reduce expenditures has been felt throughout the business world, even in data processing. Budgets are cut, raises are cut or canceled, staffs are reduced, new equipment is postponed. There are rough seas and even storms ahead for many DP shops.

But it is an ill wind that blows no one good. The manager who can keep a firm hand on the tiller, set his course and reach his goal is going to be a hero, not just to his crew, but to his supervisors as well. More important, he will have the opportunity to establish and maintain standards for dealing with users. And he can accomplish all this by applying the principles of an old tool — the system life cycle.

The choice of this label is most unfortunate. To many people it connotes, as it once did to the writer, an esoteric science that projects the entire life of a system from conception through design and implementation, including maintenance and its ultimate replacement by another system. The term is used in zoology and, according to *Webster's New World Dictionary*, it means "the series of changes of form undergone by an organism in development from its earliest stage to the recurrence of the same stage in the next generation."

So the definition seems to support the idea that the system life cycle can have as many stages as you wish — from three or four to fifteen or more. There are shops that use sets of volumes describing the system life cycle stages in extensive detail. And there are shops that have copied articles describing the stages and distributed them to their staff, hoping to inspire them. And then there are all those other shops that never even try.

That is a shame because the system life cycle is one of your best tools for controlling projects. It puts much of the responsibility for success on the user. It provides convenient breakpoints at which time a project can be redirected or even dropped without having cost too much in terms of time or money.

Four Stages

The system life cycle can be conveniently divided into four stages: survey, detailed investigation, specifications and implementation. Some people include conception, but that usually occurs outside of DP so it is not included here. Documentation and maintenance are included under implementation.

The cycle starts with a request to solve some problem: It could be one of business, programming or scheduling. This request prompts a survey of the problem area, a brief investigation of the dimensions of the problem and a feasibility study.

The survey is usually conducted by a single person who investigates all areas pertinent to the problem. This person will submit a report to the one who requested the survey.

This report will list the areas examined and the parties interviewed. In addition, it will contain the surveyor's opinion of the feasibility of pursuing the project after showing the resources required, the resources available, the estimated cost to completion and the probable cost benefits.

At this point, given a negative survey report, the user has the option of discontinuing the project with the expenditure kept at a minimum. If the user wants to pursue the project anyway, the DP manager can appeal to a higher authority using the survey report to support his demand that the user justify the proposed expense.

When used effectively, the survey can winnow out projects that may never be completed or completed way over schedule at enormous cost. This will keep your people working on "feasible" projects. And when they are feasible, they can be controlled.

Detailed Investigation

If the project has been deemed feasible, and if the costs and schedules are acceptable to the user and to the DP manager, then the project enters the second stage — detailed investigation.

In this stage, every aspect of the project should be examined and quantified — for example, how many people are now working in the area of study? How much overtime is incurred? How many forms are used? What is the volume of work at different times and days? Will this system have an effect on DP? Will it conflict with other production work? Will it

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Works With In-House Methodology

Software Helps Boost Insurer's Productivity

LOS ANGELES — The introduction of new technology imposes unusual strains on DP departments.

At Mission Insurance Co. here, a small programming group was faced with the task of modifying and upgrading old code in an inventory of thousands of IBM 360 and 370 programs for use on two IBM 4341s. This was in addition to continuing the routine maintenance and development work without an increase in staff.

The upgrade is now taking place smoothly, thanks to a product called Maintenance Programming System (MPS) and an in-house methodology.

MPS is an integrated set of software facilities that improve maintenance productivity by automating the analysis and documentation of Cobol programs. It was developed by Sage Systems of Bethesda, Md. According to Richard Mittleman, Mission's manager of Research & Development for Corporate Information Systems, "MPS makes it possible for our methodology to work. At least 50% of our productivity gains derive directly from MPS."

Mission Insurance is a $500 million company that runs an IBM 370/158 and a 360/65, which it plans to replace with two 4341s. The total programming staff is 20. This staff provides development and maintenance services for the 12 major systems and thousands of programs that make up Mission's computerized operations.

With the upgrade from the 360 and 370 to the 4300 taking place at the same time, the group must achieve maximum productivity. One of the secrets of its success lies in its use of a computer-supported development methodology.

Developed In-House

The methodology, which Mittleman describes as "a subset of structured programming," was developed in-house. It is based on the principle that "programs are made to be changed," and on the belief that "people trained in structured code cannot write bad programs."

The structured overhead is no more than 10%, according to Mittleman, and this is repaid "handsomely" because he estimates that the structured standards have cut programming and maintenance times by 50%.

However, this is a major difference between establishing standards and actually following them. Mission Insurance has taken a two-pronged approach to ensuring that standards are followed. The approach consists of establishing controls on the one hand and tools to make it easy on the other.

The controls are enforced by a group of three librarians. It is their responsibility to ensure that standards of coding structure and documentation are maintained and to ensure that programs are not allowed into production until all quality requirements are met.

MPS Key Element

On the support tools side, one of the key elements is MPS. It offers six features to support program maintenance and automate the production of program-level documentation.

The file comparison feature (Fcom) of MPS is a parameter-driven system that automatically compares any two versions of computerized information. It can thus compare files, programs and blocks of text. Once the file feature has made the comparison, it then reports any differences between the two.

At Mission Insurance, each amended program is submitted to the program librarian along with an Fcom listing showing the differences between the old and new versions. These differences must be signed by the programmer to the effect that these were the alterations required.

Benefits of Procedure

This procedure has a number of benefits. First, it ensures that the programmer has a final opportunity to think about what has been done.

It also attributes a certain level of responsibility to the programmer, which is valuable in itself.

Finally, it provides a documented hard-copy audit trail of all development and changes to a given program.

The documentation aspects of MPS are important because, as Mittleman says, "They enable programmers to concentrate on the logic of the change and not get lost inside the code." The standardized documentation also means that specific programmers are not locked into specific programs.

"When I look back at the old DOS programs," says Mittleman, "I can see that most are poorly written, but that some are excellent. Some are so individually written that you can tell who wrote a given program, although they do take a while to disentangle.

"With our new coding and documentation standards, I can't tell who did the programming, but I do know that it's consistently above the level of the old. In 10 years, people will be able to look back and understand what we did."

Another major aid provided by MPS to the maintenance programmers is the Data Division Cross Reference (Xref). This is used if a data name in the program is to be changed. Xref checks through the procedure division, saving the programmer time in locating every occurrence of the name and removing the risk of error. Other MPS capabilities include a program reformat utility to enhance the readability of programs and a program logic flow analyzer.

"We try to coordinate our standards and our documentation to make the meanings of our programs more intuitively obvious," observed Mittleman, "and we apply the same philosophy to products that we purchase from outside.

"As a bit-fiddler, I like to test my mind against a complex system, but as a manager evaluating software products, I have a completely different view. I ask myself: 'Is what they are doing obvious to me?' and the more the answer is 'yes,' the more usable and practical the product will be for the programmer. I like products that make it difficult to make a mistake, and MPS was clearly superior to the other products evaluated in this respect."

Mission Insurance acquired MPS just over a year ago and considers that half the benefits gained from their whole methodology are attributable to the product.

"It's the positive atmosphere and attitude toward maintenance it helps to create," says Mittleman, "and the fact that the programmer doesn't have to produce documentation because it's done for him."

System Life Cycle Helps Control Projects

(Continued from Page SR/25)

require more core or a faster CPU? Will you need terminals, another printer, another shift?

You should get the user actively engaged in this stage. He must describe exactly what he wants and how he wants it. He must help indirectly with the investigation.

When all of the data has been collated, the project leader analyzes it and makes a decision: Is the project still feasible? If he doesn't think so, he reports this to the DP manager who will pass it on to the user. The user will now have to withdraw his request or modify it so it will be acceptable to the DP department.

In his proposal, the DP manager will state his understanding of the problem and how he thinks it can be solved.

The proposal is presented to the user, who can either accept it as written or ask for clarification or modification.

This can be a very crucial point in the cycle. The user knows what he is supposed to get and when. And the DP manager knows what he has to do and how much it should cost him. Once again, the project can be terminated or redirected.

The proposal contains the goal of the project, and it charts the course to reach it. The third stage, specification, describes exactly how it is to be done. It is the blueprint.

The job of writing specifications is a straightforward one. It is also a very important one. Any gaps or fuzzy thinking here can prove disastrous in the next stage.

When the DP manager gets the specs, he will know more precisely how the project will be completed and when and how much it should cost. This is the last breakpoint.

The implementation stage is the most complex and expensive of them all. But if the earlier stages were completed properly, this stage should be mechanical. You already have the blueprint.

How will the system life cycle help you reduce costs? It will divide your project into discrete modules, each more complex and more expensive than the previous one. You do not have to commit to an entire project for a continuous period. You could conduct the survey in January, do the detailed study in March and April, write the specifications in June and July and not start implementation until December. This would free up your staff to work on other phases of other projects, which should help make their jobs more interesting and, therefore, more productive.

Goodwin is a senior associate for The Programming Maintenance Co., Brooklyn, N.Y.

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Message System Cools Costs in Alaskan Agency

JUNEAU, Alaska — The Legislative Affairs Agency of Alaska is expanding its information network and saving money at the same time. By adopting a new message switching system, the state expects to save $53,000 yearly by eliminating duplicate hardware required by the agency's previous system.

The Legislative Affairs Agency has an IBM 3031 computer with 6M bytes of memory by which the agency supports the legislative branch of the state government. It categorizes and records data from legislative sessions, follows the progress of bills and provides legislative data to the public through its 14 information offices. Three agency-sponsored ombudsman offices counsel citizens in disputes with the state.

In 1978, the agency leased several 9,600 bit/sec communications lines throughout the state, using half of them to support an IBM system and half for Trans Alaska Data Systems' Star/Ajis network. Because it was a dedicated message processing system, Star/Ajis required its own terminals, printers and modems, all separate from the IBM equipment.

Pete Kinney, a telecommunications specialist with the Legislative Affairs Agency, summed up the problem: "In each office we had two pieces of hardware that cost a lot of money and took up a lot of space. To support two networks and pay for multiple equipment is not a good way to go. It wasn't a smooth operation."

Need for Replacement

By 1980, it was clear that the expensive Star/Ajis system would have to be replaced by a message switching network that would be compatible with the IBM hardware.

Already familiar with On-Line Software International, Inc. of River Edge, N.J., the DP manager discovered Omnicom, the company's English-based on-line message processing system. A demonstration convinced the Legislative Affairs Agency to take a closer look and, in October, Deputy Director Earl Vogt decided to install Omnicom.

If it tested out favorably during November and December, he planned to have it running successfully by January, in time for the new legislative session.

The Legislative Affairs Agency used several sites in Anchorage and Juneau to test Omnicom. Though available to everyone with IBM terminals, the data processing staff limited the system's use during the test in order to create a well-controlled test environment.

Within two months Omnicom had become a valuable addition to the Legislative Affairs Agency, its purchase was approved and training was held for the legislative staffs who had access to the IBM terminals.

"We worked hard to generate enthusiasm for Omnicom because we knew they could really use it. And, after their training, the aides agreed they could use the network to cut down on their work load and gather data without having to bother an information officer," Kinney said. More than 250 people were given training on the system in just a few months.

Currently the Legislative Affairs Agency has more than 140 addresses on the system. Kinney estimates that each terminal has several users, but only a few are DP people. Today Omnicom users include anyone connected with the legislative branch; research, public services, financial and personnel staff join legislative aides and paralegals in its use.

The network reaches such a diverse group of people that its "symbolic address" capability became one of the first time-saving features for the Legislative Affairs Agency. With a single command and a symbolic address, a message can be sent simultaneously to a particular grouping of terminals.

Omnicom further speeds the information flow by relieving the time lag state information offices used to experience with the Postal Service. Often they waited a week and a half or more for the legislative transcripts to arrive so they could update their records.

Today, the system brings legislative information to an outlying informa-

(Continued on SR/28)

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Don't Delay in Implementing Documentation —

By Ron Miskie
Special to CW‡

The commonly held point of view about documentation is that it is something "we can get to later" and usually is regarded as a necessary evil.

But if you are truly interested in getting more DP for the dollar and maximizing the productivity of your organization, I propose an alternative point of view about documentation that will result in increased system efficiency, reduced operating costs and greatly improved productivity.

Documentation is a very distinct form of communication. The preparation of user manuals, program and systems manuals and operation runbooks are an essential link between the designers of a system and the intended users of that system.

Once people realize that documentation is communication that results in definitive forms of action that directly relate to the productivity of employees throughout an organization, the short-term expense incurred to provide usable and effective procedural and operational manuals for systems departments and their users will not be so great a price to pay.

What Good Is a System?

What good is a system if it can't be used or maintained with any degree of simplicity? How else are users to know what is available to them or even how to use the basic features of a system if they are in the dark and must rely on constant personal interaction (usually telephone calls or meetings) with the people who have designed the system?

To carry this one step further, what happens when the people who have designed and maintained the system are no longer employed by your organization?

The answers to these questions are obvious. Users are dissatisfied and don't know what to do. Systems departments spend tremendous amounts of time trying to figure out what must be done to maintain and enhance the system. Very often, systems are scrapped or become a series of patches in order to keep the system up and running.

To provide the proper documentation for a system is not difficult. It is time-consuming and requires interaction between the documentation specialist, system designers and users of the system.

What is required to provide good documentation is a commitment from top-level management to realize that the purpose of designing and creating a system is not for the purpose of designing and creating a system. The realization that the purpose of a system is to increase productivity will enable management to view documentation as the most fundamental form of communication with the users and will provide them with the means to produce the intended results for the organization.

In the short run, providing good documentation appears to be expensive. It is. Make no mistake about this — "You get what you pay for."

In order to measure effectively the cost of documenting a system, the following must be looked at and evaluated:

- How much time do people spend on the telephone and in meetings answering user questions and researching problems?
- Is time lost by programmers and

System Cools Agency Costs

(Continued from SR/27)

tion office just as soon as a reporter in Juneau enters the data into the CRT terminal, often the same day legislation occurs.

Ensuring network reliability is an important aspect of the agency's telecommunications section — no small task since Alaska is enormous, spreading over three time zones. However, every morning the system's MSGIT command helps to make certain all the terminals are in good working order.

Now the Juneau office doesn't wait until someone across the state complains about his terminal being down. Instead the system can locate an inoperable terminal and Kinney can have it up and running even before the users are in their offices.

The network also services such other programs sponsored by the Legislative Affairs Agency as the Telecommunications Conference Network. Via this network, state residents with governmental problems or concerns can gather at an information office and communicate with their legislative representatives across the state.

Omnicom is responsible for keeping the records of these conferences, including the residents' addresses and statements.

Even the public can get hands-on experience with the network. Residents who are familiar with the workings of their information office may request special data or ask to send their own messages. Under the supervision of a staff member, the resident can send or gather his information on a public terminal.

News now travels fast in Alaska, while high costs to maintain a message system have been reduced.

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analysts just in thinking about having to write? (A job by the way, that they neither like to do nor have been trained to do.)

• Would a programmer or analyst spend more time writing manuals than someone trained to do this job?

• Have you considered that the time an analyst or programmer spends documenting could be better used designing and creating a more productive system?

• Have you measured the time a programmer or analyst spends locating the source of a problem?

• How much machine downtime is a result of inadequate documentation?

The answers to these questions begin to scratch the surface of the real issues behind the costs of providing good documentation.

You're only kidding yourself and the organization you work for if you think you're saving money by providing no documentation, documentation that just gets you off the hook or documentation that doesn't provide all your users with the tools they need to reach a peak level of productivity.

It is more important to provide documentation that enables people to use the system to produce the results it was designed to do than it is to just design a system. Documentation is the key element necessary to communicate about the system you've created to DPers, end users, auditors and management. How else can you expect people to understand, use and produce the intended results for which you've designed a system?

Some Advantages

The advantages of having good documentation include the ease with which the DP staff can maintain and enhance the system, better understanding of the system processes by both the user and the DP department (not to mention auditors and the Foreign Corrupt Procedures Act that establishes guidelines for required documentation) and a reduced learning curve that will enable new employees to be more productive in a shorter period of time.

Other advantages include moving programmers and analysts onto other applications that will not only broaden their experience but make them more effective in getting their jobs done, and increasing system usability and productivity.

Documentation is given a low priority because of the time and effort required to develop it properly. Also, documentation is usually written by individuals who have no idea how to write manuals for anyone other than themselves. This will result in user confusion, discontinuity of operations and duplication of effort.

Good documentation affords an organization a high degree of safety and security and must be done by professionals who know how to communicate to produce results.

Using an outside service to provide your documentation needs has one main disadvantage — the time that must be spent learning the system. The advantages of using an outside service, however, far outweigh the disadvantages. These include:

• Demonstrated professionalism. You're hiring experts trained to write documentation that will spell success or failure for your system.

• Programmers and analysts who can do the job they were actually hired to do.

• Completeness of your product demonstrated by the documentation provided.

• Lower costs for customer/user support (field service representatives, hot lines and so on).

The disadvantages of doing the job internally include:

• People setting standards who have little or no DP background.

• Internal efforts that fail because people who understand the product too well tend to write as a programmer or analyst and document a system's esoteric features rather than provide the information a user really needs to know.

• Documentation written internally is never tested and most often is not reviewed with the user.

Users are demanding more from systems groups in the form of documentation and they simply do not know how to write for specific audiences. The point of view from which DPers see a system is obscured. They cannot see it from the users' point of view, nor should they be expected to.

Organizations that will maintain the point of view that documentation is something "we can get to . . . later" or view it as a necessary evil are missing the boat.

Users of systems are becoming much more sophisticated and attuned to what's going on in the computer field. Those companies that continue to operate and provide get-by-type documentation will find their product sales decreasing, their credibility with the user at an all-time low and the very purpose of designing and having systems will be met with strong resistance.

Documentation is communication that results in action and must be written with the purpose of producing the intended results the system was designed for, which, simply put, is increasing your company's productivity.

Miskie is senior documentation specialist for Documentation Development, Inc., New York.

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Insurance Firm Claims Trainees Stay Employees

LOS ANGELES — "In the data processing profession, people want to learn as much as they possibly can. I believe that our dedication to providing ongoing training has had a direct positive impact on employee turnover," according to Eric Jarleborn, systems manager of education and training for Transamerica Insurance Group here.

For Jarleborn and his staff of three instructors, providing training for Transamerica Insurance Group's 150-member systems and programming staff is a full-time job. It is that commitment to ongoing training that is credited with the firm's uncommonly low turnover rate among systems and programming personnel.

At Transamerica Insurance Group, most analyst/programmers are hired as trainees, a practice that Jarleborn heartily supports. "Based on my own experience in systems development, I much prefer to take on a trainee fresh out of class, rather than someone with a year or two of experience. I know what skills the trainee has been taught and what tasks he or she should be able to perform. The more experienced new hire is, to a degree, an unknown quantity," he said.

When Jarleborn speaks of Transamerica Insurance Group trainees, he's talking about people who undergo a rigorous entry-level training program that begins shortly after they are hired and continues through seven preset training periods into their fourth year on the job.

Trainees begin with 12 weeks of full-time training conducted by three full-time instructors. After completion, the trainees return to the systems and programming department for 2½ months of on-the-job training.

Training Period II commences approximately five months after the trainees begin work. Following this 3½-week training period, the students are classified as full-fledged analyst/programmers.

But, as Jarleborn is quick to point out, that's not the end of the training. Over the next 3½ years, analyst/programmers undergo 15 more weeks of self-paced, multimedia training in five preset training periods. During the complete seven period entry-level program, students use multimedia courses to receive a thorough grounding in structured analysis and programming, TSO and a variety of other subjects.

In addition to the prescheduled entry-level training program, Jarleborn and his staff also offer a wide range of continuing training to more experienced staff members on subjects that include data base and on-line applications using such Deltak, Inc. multimedia training series as "The IMS Series," "The CICS Series" and "DL/1 Programming."

Low Turnover Rate

According to Jarleborn, continuing training has been a key factor in Transamerica Insurance Group's low turnover rate among systems and programming personnel. "Today, approximately 90% of our staff began their careers with us as trainees. About 60% of our system managers are graduates of our entry-level program. We develop our own supervisory and management talent as well," he said.

Jarleborn and his staff conduct entry-level, continuing end-user training in the learning resource center — a well-equipped facility on the second floor of their home office here.

Instructor Sonnie Bloom, who is responsible for user training, uses the lecture hall for seminars for managers and supervisors, employing Deltak Advanced Technology Library Video Journals such as "The Office of the Future" and "Corporate Data Base Strategy." Members of the systems and programming staff often attend special showings of such videotapes as "The Mark of the DP Professional" and "Recruiting and Developing the DP Professional."

Jarleborn points to the strong commitment to training by upper management at Transamerica Insurance Group as the key factor contributing to the success of its technical training effort.

Full-Time Instructors

Another contributing factor to its success is the availability of full-time instructors. Jarleborn feels that usually there is an abundance of talent, including many ex-teachers, in most systems and programming staffs.

He taps that talent for his training program with systems staff members serving as trainers on a one-year rotating basis.

Jarleborn concluded, "Thus far, everyone who has worked with us as a full-time instructor has returned to the systems and programming department at a better position after the one-year training assignment. Their managers obviously view their experience as trainers as a significant asset."

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Most Would Pay Up to 30% More

SBS Tariff Proposal Awaits FCC Decision

By Phil Hirsch
CW Washington Bureau

MCLEAN, Va. — Most customers will pay up to 30% more but some will pay as much as 4% less if tariff changes recently proposed by Satellite Business Systems (SBS) are accepted by the Federal Communications Commission (FCC).

The changes affect Communications Network Service A (CNS-A) and B (CNS-B), the company's dedicated and shared switched satellite services. The proposed effective date for the new CNS-A rates is Oct. 1, while the CNS-B rates would begin Jan. 1.

Meanwhile, SBS has deferred a new Data Network Service, featuring small-diameter earth stations and designed to appeal to customers with smaller volume traffic requirements. The company will "re-evaluate the timing and structure of the offering," said an SBS spokesman, who indicated that revamping is needed in terms of service features, price or both to accommodate current market demand.

Under the present CNS-A tariff, the customer pays $12,150/mo for each earth station plus a varying amount for each port; in the case of CNS-B, the basic arrangement is the same except that the monthly charge for an earth station on the customer's premises is $7,500. The charge for a shared earth station off the customer's premises — SBS calls it a "service point" — is $3,000/mo.

Port Fees Altered

Under the proposed tariff, the CNS-A earth station charge would be $17,815/mo instead of $12,150, and the CNS-B charge for an on-premise earth station would rise from $7,500 to $13,000. The service point charge, however, would drop from $3,000 to $1,500.

Port fees have also been drastically altered in the new tariff. Currently, CNS-A and CNS-B customers pay for ports according to the number they need. The proposed tariff lowers the charges generally for voice ports, while leaving usage charges for data ports the same.

For example, for 150 or fewer voice-grade ports, the new charge would be $95/port vs. the current $110. Data port charges range from $150/mo for a 2,400 bit/sec connection to $3,000/mo for a 3.1M bit/sec port.

However, the new tariff imposes a minimum charge in both cases. The minimum would be $17,850 for CNS-A customers and for CNS-B customers, $11,000.

The net effect of the minimum is to increase charges most for those who need a small number of ports. However, SBS has softened the blow somewhat by imposing this change in five stages.

Assuming the proposed tariff goes into effect in October, a CNS-A customer would be liable initially for a $6,650 monthly minimum port charge. The full amount, $17,850, would not be imposed until October 1983.

SBS has also requested FCC permission to charge more for transmission. Currently, transmission is sold in units of 224K bit/sec. There are two types of these transmission units (TU): a full-time TU (FTU) makes the capacity available 24 hours a day, seven days a week, while a Demand TU (DTU) is assigned on request, to handle temporary traffic peaks.

The new tariff increases the price of an FTU from $2,100/mo to $2,550 and the price of a DTU from 1.12 cent/sec to 1.6 cent/sec. But these increases are mitigated by the introduction of Full Business Day Transmission Units (FBTU) for both services and a Nonbusiness Day Transmission Unit (NTU) for CNS-B. The price of the former is $2250/mo while the cost of the latter is $600.

The FBTU will be available 8 a.m. to 8 p.m., Monday through Friday, and throughout the weekend; NTUs will be available 8 p.m. to 8 a.m. during the week and throughout the weekend.

Amdahl Product Series Supports Interactive Applications, X.25

SUNNYVALE, Calif. — Amdahl Corp. has unveiled a series of network concentrators and administrators that offer support of interactive applications together with the capability to access X.25-based packet-switching networks. The products also provide centralized network management and a network billing system.

The 4400 series is said to provide a systems solution to reduce data communications line costs while increasing flexibility and efficiency in networks. The products are compatible with most existing DP equipment, the vendor claimed.

The 4400 network concentrators reportedly support asynchronous and IBM 3270 binary synchronous communications (BSC) devices and provide each supported terminal with dynamic application and host selection.

The network administrator, operating in conjunction with the network concentrators, centralizes network control independent of host, collects network billing and usage data, reports status and performs diagnostics.

The concentrators are available in eight, 16-, 24-, 32- and 40-port models, and the price range runs from $6,650 to $22,000. The network administrator costs $30,000; there are varying software maintenance prices.

Amdahl is located at 1250 E. Arques Ave., P.O. Box 470, Sunnyvale, Calif. 94086.

DTS Series 500 POS Systems Get Addition

MAYNARD, Mass. — Data Terminal Systems, Inc. (DTS) has introduced another member of its Series 500 point-of-sale systems.

Designed for a variety of general merchandise and other retail applications, the stand-alone system is said to offer up to 528K bytes of memory, host communications and credit authorization capacities without the need for an in-store processor.

The Model 521 will meet requirements for central file processing and custom report formatting, a spokesman said. It uses a sequential macro file option to increase speed and uses less memory than previously required, he added.

The device is available for $3,395 from DTS, 124 Acton St., Maynard, Mass. 01754.

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Data Briefs

DEC VT 100 Receives Fully Compatible Unit

ST. LOUIS, Mo. — Micro-Term, Inc. has announced the Ergo 3001, a CRT terminal said to be fully code-compatible with the Digital Equipment Corp. VT 100 terminal.

The unit reportedly comes with a standard 3001 pages of memory, a screen saver, plain English setups and user-programmable function keys. A diagnostic mode is also included.

The unit costs $1,495, the vendor said from 1314 Hanley Industrial Court, St. Louis, Mo. 63144.

Port-Sharing Unit Permits Port Storage

CHAMPAIGN, Ill. — Data Communications Brokers, Inc. has introduced a port-sharing unit that reportedly permits users to save ports on a computer front-end processor and build simple point-to-point networks.

Up to four modems and/or terminal devices can share a single computer port. The number of devices sharing a single port can, however, be extended via a pyramid connection, the vendor claimed.

The port-sharing unit is available for $875, the vendor said from 3000 Research Road, P.O. Box 3658, Champaign, Ill. 61820.

Bell Labs' 212 Gains 1,200 Bit/Sec Modem

CHICAGO — A full-duplex, 1,200-bit/sec modem has been announced by U.S. Robotics, Inc.

The Micro Link 1200 Modem is Bell Laboratories 212-compatible and is connected to the phone lines via an RJ11-C standard phone jack. Interface to a computer or terminal is via RS-232C.

The microprocessor-based unit reportedly provides Manual Originate/Manual Answer operation. An analog loopback, self-test feature is included. The $449 price includes phone line cable, power supply and a one-year limited warranty. U.S. Robotics is located at Suite 1718, 203 N. Wabash, Chicago, Ill. 60601.

Low-Profile Modem 212A-Compatible

SANTA CLARA, Calif. — Ven-Tel, Inc. has announced a low-profile 212A-compatible modem designed for the office environment.

The MD212-1E offers 300 or 1,200 bit/sec full-duplex serial binary communications over the switched network or leased lines. It reportedly originates and answers calls and is compatible with all 212A-, 103- and 113-type modems.

Less than 2½-in. high, the modem costs $695 from the firm at 2342 Walsh Ave., Santa Clara, Calif. 95051.

Micro-Baud Offers Full-Duplex Modem

SANTA CLARA, Calif. — Micro-Baud Systems, Inc. has announced the MB 80505/TV1200, a full-duplex integral modem.

The unit features full keyboard control with selectable 300 or 1,200 bit/sec transmission rates. Other features include automatic turn on and off, manual or automatic answer, manual or automatic originate, modem deactivation, telephone dial, redial and continous dial and a speaker, the vendor said.

The unit costs $600 from the vendor at 3393 De La Cruz Blvd., Santa Clara, Calif. 95050.

DEC LA120 Printer Boosted by Graphics

BURLINGTON, Mass. — A color graphics upgrade for the Digital Equipment Corp. LA120 terminal printer has been introduced by Texprint, Inc.

Decolor is said to provide printing and dot-addressable plotting in up to 15 colors over a full page, while maintaining the speed, versatility and reliability of the LA120.

The software reportedly conforms to DEC's graphics protocol standards and is compatible with most DEC graphics terminal products, including the VT125. Decolor retrofit kits cost $995 from Texprint at 8 Blanchard Road, Burlington, Mass. 01803.

Diagnostic Tool Made For RS-232 Interface

PROVIDENCE, R.I. — Electro Standards Laboratory, Inc. has announced the Model 700-RM, a rack-mounted RS-232 interface analyzer.

The diagnostic tool was designed for use with standard RS-232 or CCITT V.24 data interface of modems, multiplexers, terminals and processors. It can be patched between data terminal equipment and data communications equipment to monitor all data, timing and control signals, the vendor said.

The unit costs $325, the vendor said from P.O. Box 9144, Providence, R.I. 02940.

Micros Pick Up Video Display Units

BRISBANE, Calif. — USI International's Computer Products Division has green phosphor and amber screen video display monitors for Apple Computer, Inc., Osborne Computer Corp. and IBM microcomputers.

The USI Pi-1, Pi-2 and Pi-3 measure 9- and 12 in. diagonally, feature 20 MHz bandwidth and horizontal resolution of 1000 lines at screen center. They also feature display brightness/contrast controls, a power switch and an LED power indicator.

Connection to the microcomputer is with a RCA phone jack and a standard SO-239 connector.

These products are priced at $235, $249 and $289, respectively. USI is based at 71 Park Lane, Brisbane, Calif. 94005.

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Lexidata Graphics Systems Get Addition to 8000 Family

BILLERICA, Mass. — Lexidata Corp. has made an addition to its System 8000 family of graphics display systems that is said to add a Winchester disk and tape cartridge unit to the high-resolution raster graphics system.

The 8400/D incorporates a Motorola Semiconductor Products, Inc. 68000 processor with 256K bytes of random-access memory, 64K bytes of read-only memory, display processor, display monitor, a 33M-byte disk, a 10M-byte tape cartridge and eight RS-232 ports packaged in a desk-type or lowboy enclosure, the vendor reported.

The tape unit is a start/stop type that can be used for individual file storage or as a disk backup, and the transfer time for the unit is 1.04M byte/sec, according to the vendor.

The system starts at $36,800. More information is available from Lexidata, 755 Middlesex Tnpk., Billerica, Mass. 01865.

IDS Adds to Line Of Data Testers

LINCOLN, R.I. — International Data Sciences, Inc. (IDS) has announced an addition to its line of hand-held data communications testers.

Microprocessor-based, the Model 67/60 is said to combine a full-function bit error rate tester, polling and echo tests, a FOX and user message generator with a full RS-232C, V.24 breakout and monitor panel. The light-weight unit requires a 115- or 230 Vac power source and can be used as a first-level test set, the vendor said.

Features include a fail-safe audio alarm; a four-digit, liquid-crystal display; a switch-selectable X-on, X-off control; and selectable stop bits, parity bits and character code levels that reportedly permit the user to test all asynchronous modems and multiplexers, including the Bell Laboratories 212A and Racal-Vadic, Inc. 3400 series.

The 67/60 can emulate a master or remote terminal for polling tests on a two- or four-wire full-duplex system, according to the vendor, and is compatible with other popular polling testers. Asynchronous and synchronous tests reportedly can be performed at data rates from 50 to 19.2K bit/sec.

The breakout portion of the 67/60 is said to be identical in format to IDS' "Blue Box," RS-232C and V.24 analyzer. The unit costs $995 and is available in 45 days. For information, contact the Marketing Department, IDS, 7 Wellington Road, Lincoln, R.I. 02865.

Duart Simplifies System Designs

SUNNYVALE, Calif. — Signetics Corp. is offering a dual universal asynchronous receiver/transmitter (Duart) said to simplify designs and reduce costs in electronic systems that depend on serial information transfer.

The Model SCN2681 reportedly reduces the number of integrated circuits needed to achieve fast, reliable communications between computers and peripheral devices such as terminals, keyboards, printers and other computers.

The new circuit is expected to be especially useful in office automation, multiprocessing and industrial control applications where various parts of the system need to transmit to and receive data from many sources.

It costs $14 from Signetics at 811 E. Arques Ave., P.O. Box 409, Sunnyvale, Calif. 94086.

Fully Assembled Video Boards Boast Multibus Capability, Integration

BOHEMIA, N.Y. — TSD Display Products, Inc. has announced four fully assembled video boards that reportedly provide Motorola, Inc. MC68000 Multibus capability and can be integrated into all Multibus systems.

The CPU board incorporates 256K bytes of on-board random-access memory (RAM), permitting full-speed operation of the MC68000, the vendor said.

The main peripheral board is said to feature up to 32K bytes of programmable read-only memory. The board also includes a triple interval timer, two programmable Universal Synchronous/Asynchronous Receiver/Transmitters, a polynomial generator and checker, three parallel interface chips, a keyboard interface and a priority interrupt controller.

The video board has 32K bytes of RAM and a programmable video controller. It also features a programmable direct memory access controller, according to the vendor.

The CPU board costs $1,795, the main peripheral board costs $850, the video board costs $800 and the serial I/O board is priced at $725. Quantity discounts are available, the vendor said from 35 Orville Drive, Bohemia, N.Y. 11716.

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DL/1 Applications Programming • Logical/Physical data base structures • Code DL/I calls to retrieve, update, add or delete segments • Build segment search arguments • Process status codes • Establish data base position	DL01	20-22	25-27
IMS/VS Data Communications Programming • Describe IMS/VS message flow • Code DL/I calls to send and receive single or segmented messages • Design and code conversational programs • Use batch message processing facility	IMS02	23-24	28-29
PROGRAM & SYSTEM DEVELOPMENT			
ON-LINE Application Systems Design • Define on-line system requirements • Develop specifications and controls • Describe screen design procedures • Manage on-line files/data bases • Describe communication network components	SD02	29-10/1	
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Allows Communication at 1,200 Bit/Sec

Bell 212A-Compatible Modem Offered

NORCROSS, Ga. — Hayes Microcomputer Products, Inc. introduced a Bell 212A-compatible modem that allows RS-232C-compatible computers or terminals to communicate over telephone lines at 1,200 bit/sec.

The Hayes Stack Smartmodem 1200, like the original Smartmodem, connects directly to the telephone line and an RS-232C port. It reportedly can be connected to any U.S. telephone system for pulse and Touch-Tone dialing.

The stand-alone modem is said to execute user commands and responses with either decimal digit or English word results codes. It can be controlled by any programming language and reportedly includes circuitry for autodial and autoanswer. Power-on default options are available.

Smartmodem 1200 comes with a two-year limited warranty. The unit, which includes a power pack, one modular telephone cable and an owner's manual, is priced at $699, the vendor said from 5835 Peachtree Corners E., Norcross, Ga. 30092.

Device Protects Against Data Errors

CHERRY HILL, N.J. — A device designed to protect against data transmission errors on dial-up lines is available from Datatel, Inc.

The DCP4000 asynchronous data protector, used at the computer, will request retransmission of erroneous data when called by a terminal also equipped with a DCP4000.

When called by terminals not so equipped, the device will bypass itself and allow all data to go directly to the computer, according to the vendor.

The device incorporates an autospeed capability for use with Bell Laboratories 212 modems allowing it to dynamically adjust its data rate to that of the 212.

It costs $560, Datatel said from 1008 Astoria Blvd., Cherry Hill, N.J. 08034.

Modem Fits Apple II

TARZANA, Calif. — A stand-alone full-duplex 1200 bit/sec. modem that utilizes large-scale integration for users of Apple Computer, Inc.'s Apple II microcomputers has been unveiled here by Novation, Inc.

The 212 Apple-Cat II modem reportedly allows rapid communications with any Bell 212A-compatible data set. It consists of Novation's 212 Upgrade Module installed in an Apple II, along with Novation's Apple-Cat II, and occupies only two card slots.

This product costs $725, and the 212 Apple-Cat Upgrade option added to an existing Apple-Cat II costs $389. Novation is based at 18664 Oxnard St., Tarzana, Calif. 91356.

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Card Reader Extends DDP

PLYMOUTH MEETING, Pa. — Peripheral Dynamics, Inc. has introduced a microprocessor-controlled automatic card reader with an RS-232 interface that is said to extend distributed data processing (DDP) to the card input level.

The MC3155 series reportedly featured 10 selectable transmission rates from 110 to 9,600 bit/sec, data resynchronization and character transmission with invalid code detection.

Using the Intel Corp. 8085, the unit has 16K bits of eraseable programamble read-only memory (Eprom) program storage with an option to add a second 16K bits of Eprom.

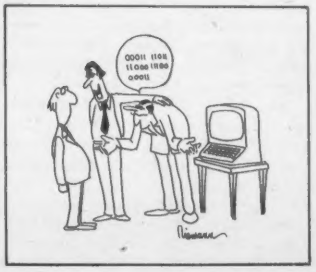
The 300 card/min punched hole and reading Model MC3155HTX costs $4,000 and the 300 card/min punched hole/mark sense reading Model MC3155MTX costs $4,620 from the firm at 5150 Campus Drive, Plymouth Meeting, Pa. 19462.

Interface Analyzer Fits RS-232 Modems

PROVIDENCE, R.I. — Electro Standards Laboratory, Inc. has announced the Model 700-RM, a rack-mounted RS-232 interface analyzer.

The diagnostic tool was designed for use with standard RS-232 or CCITT V.24 data interface of modems, multiplexers, terminals and processors. It can be patched between data terminal equipment and data communications equipment to monitor all data, timing and control signals, the vendor said.

The unit costs $325, the vendor said from P.O. Box 9144, Providence, R.I. 02940.



Costs Less Than IBM Counterparts

Magnuson Joins M80s, IBM Peripherals

SAN JOSE, Calif. — Magnuson Computer Systems, Inc. has combined three of its existing processors with IBM-manufactured peripherals to offer packaged systems that are said to be a first for the plug-compatible mainframe supplier.

Built around the low-end members of Magnuson's M80 CPU line, the systems typically cost 15% to 20% less than their IBM counterparts and boast performance advantages like superior storage capacity, a Magnuson spokesman said.

To an IBM configuration equipped with a 571M-byte 3370 disk unit, for example, Magnuson reportedly could respond with a packaged system incorporating two 3350s, for a total storage capacity of 635M bytes.

The resulting advantage in disk space is expected to increase the M80 line's existing edge over IBM in systems performance, which already offers 10% to 50% more computing power than its IBM 4331 rival, a spokesman said.

For the time being at least, Magnuson is limiting its packaged systems project to the M80/30 series segment of its overall processor line, the spokesman said.

The M80/30 series members include the Models 30, 31 and 32. In time, however, the company will probably extend the packaged systems concept to the rest of its IBM-compatible mainframe family as well, the source predicted.

In addition to offering users a choice of three Magnuson CPUs — the M80/30, M80/31 and M80/32 — the packaged systems come with a wide variety of peripherals, including disk units, tape units, controllers, communications terminals and printers.

Although most of the peripherals will probably be supplied directly by IBM, customers can also specify hardware modules from IBM-compatible vendors like Control Data Corp., Memorex Corp. and Storage Technology Corp.

Typical peripherals for the Magnuson packaged systems will include models like the 3330 or 3350 disk units, 3420 tape unit and 1403 printer or their IBM-compatible counterparts.

The recent announcement of Magnuson's first packaged systems marks a sharp departure from the company's traditional business emphasis.

In the past, the firm limited its product activities exclusively to processors and left users to acquire their peripherals separately from independent vendors.

A typical Magnuson packaged system incorporating an M80/30, two 120K-byte tape units, a 400M-byte disk system, 1,100 line/min printer and ports for 32 terminals costs $130,000.

The system is also available through three-, four- and five-year lease plans from Magnuson at 2902 Orchard Park Way, San Jose, Calif. 95134.

For Eclipse Line

DG Unveils High-End Printers

WESTBORO, Mass. — Two high-end 1,200 line/min printer subsystems reportedly featuring back-printing impact technology and an operator-changeable print band have been unveiled by Data General Corp. for its Eclipse line of computers.

The Models 4373 and 4374 reportedly use fully formed characters positioned on a print band to print up to 136 col of data at 10 char./in. horizontally and six or eight user-selectable line/in. vertically. The printer can handle six-part perforated fanfold paper and forms from 4-in. to more than 16-in. wide and 8-in. to 14-in. long.

The printers also feature a nylon towel ribbon with a lifetime of more than two million lines of print and a print band with a lifetime that is reportedly more than 25M impact/char.

Other features of the printers include a free-standing powered paper stacker, located at the rear of the printer and powered exit rollers. They also contain extensive on-board diagnostics and are housed in noise-reducing cabinets, the spokeswomen said.

The Model 4373, with a 96 Ascii character set, costs $28,500. The Model 4374, with a 64 Ascii character set, costs $27,000. Both units include a data channel controller.

Additional information on the printers can be obtained from DG at 4400 Computer Drive, Westboro, Mass. 01580

Calcom, Trilog Cut Pen Plotter Prices

ANAHEIM, Calif. — California Computer Products, Inc. (Calcomp) and Trilog, Inc. have reduced prices by 10% to 28% on various models of their pen and printer plotters.

Calcomp cut by 28% the price of its Model 960 pen plotter, dropping it from $34,150 to $24,650. The unit incorporates Calcomp's "belt-bed" technology. While its plot size and resolution rival those of large flat beds, the 960 is both smaller and less expensive, Calcomp claimed.

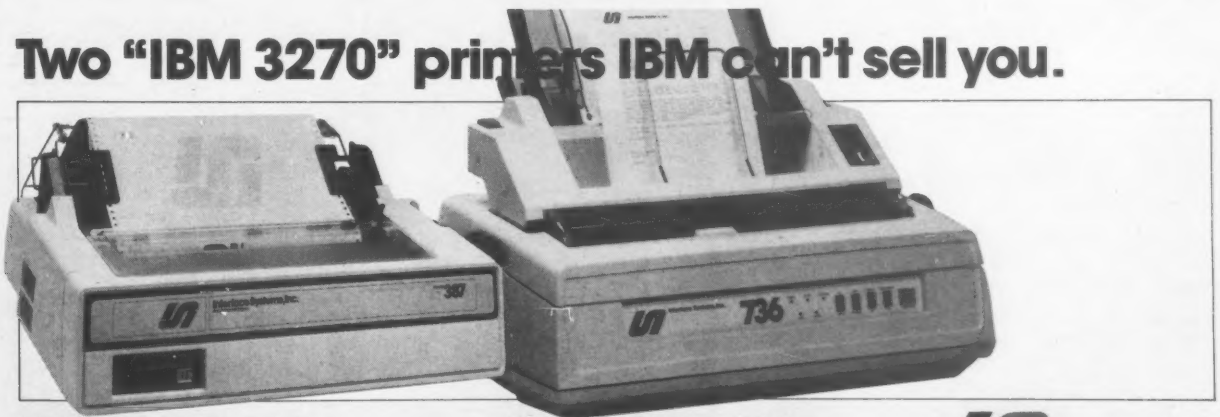
Calcomp is located at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

By reportedly streamlining its manufacturing processes, Trilog reduced prices on its Colorplot printer/plotters and its T-100 and T-1100A dot matrix impact printer/plotters. The price cuts include:

- A 10% reduction to $11,500 for its Colorplot printer/plotters. Three models are available with modified speed and dot matrix resolution specifications, as well as bidirectional paper drive, color mixing, automatic operation and use of fanfold paper, the vendor said.
- A 6% price cut for the T-100 and T-1100A printer/plotters. The T-100 high-resolution, black-and-white model now lists for $8,200. The Versatec-compatible T-1100A will now cost $9,050. Both models reportedly plot at 15 in./min with dot densities of 100 dot/in. vertically and horizontally. Other features reportedly include high characters, plain and multipart (up to six parts) paper and electronic vertical controls.

Trilog is based at 17391 Murphy Ave., Irvine, Calif. 92714.

Two "IBM 3270" printers IBM can't sell you.



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HP Adds 'E' Size Unit to Drafting Plotter Line

PALO ALTO, Calif. — Hewlett-Packard Co. has expanded its line of drafting plotters to include an 'E' size unit that features microprocessor control and incorporates the firm's micro-rip drive technology.

The Model 7585A plotter reportedly has high resolution and repeatability, a 4G acceleration rate and speeds up to 24 in./sec.

The device's pen handling capabilities include automatic setting of pen force and writing speed to accommodate different potting media and pen types, an automatic capping of pens not in use to prevent ink dryout and a programmed selection of up to eight different pens for combinations of color, line width and pen type on a single plot, a spokesman said.

The 7585A is said to perform complex plots with a minimum of programming. For instance, to draw a vector, users need only define the end points and the plotter will automatically join them with a line, the spokesman noted. Circles and arcs are drawn by inputting the radius and starting position.

The Model 7585A can accommodate media sizes ranging from E/AO to A/A4. A microprocessor-controlled edge-sensing system sets plot limits to allow scaling of plot data to fit the sheet of paper, the spokesman said.

The plotter has an addressable resolution of 0.001 in., a mechanical resolution of 0.00012 in. and a repeatability of 0.002 in. The 7585A costs $22,750 and can be shipped in nine weeks from HP at 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Telex Computer Offers Bidirectional Printer

TULSA, Okla. — Telex Computer Products, Inc. has announced the 281B, a bidirectional matrix printer capable of producing the American Library Association character set.

The unit attaches to the Telex 476L library automation keyboard display station. Hard-copy printing with the 281B is accomplished by a single keystroke on the 476L display. The print operation is buffered, enabling the operator to use the display while hard copy is printing on the 281B printer. Data can also be sent to the 281B directly from the host computer, the vendor said.

The 281B/476L combination can be attached to any processor that supports IBM's 3270 binary synchronous communications protocol. The 281B costs $1,400 including an attachment feature for the 476L.

Telex is located at 6422 E.41st St., Tulsa, Oklahoma.

Desktop Drives IBM 1403 Unit From Two Systems

LOS ANGELES — A remote, desktop control unit that can be used to drive an IBM 1403-series printer from two different computers has been introduced by Spur Products Corp.

The SRS-1 switch is said to permit the printer — often isolated because of paper dust and noise — to be operated from a computer terminal, computer room or other location. A rotary switch enables the operator to make the printer either on- or offline to the processor, while a separate toggle switch lets the operator table-load buffer memory when the print train is changed, a spokesman said.

The switch costs $500, including 50 feet of shielded cable.

Spur Products is located at 1904 Centinela Ave., Los Angeles, Calif. 90025.

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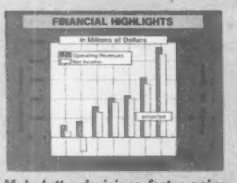

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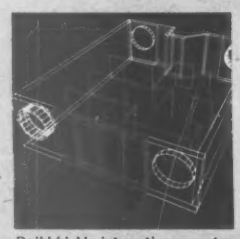

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The Control, Security and Audit of Minicomputers — Part 1

Check Security Before Going Mini: Brown

The minicomputer has proven its ability to meet the data processing requirements of both large and small organizations on a cost-effective basis. However, a mini is not without its risks and pitfalls, especially from the viewpoint of internal control and security.

In this first of a three-part series on the control, security and audit of minicomputers, Nander Brown — currently Assistant General Auditor for the Federal Home Loan Mortgage Corp. in Washington, D.C., and previously the regional manager for the Washington office of EDP Audit Control, Inc., where he directed the audit activities for commercial as well as governmental clients — discusses the reasons why a user should consider system control before turning a firm's records over to a minicomputer.

Next week, Brown will identify the kinds of controls necessary and who is responsible for holding the "keys" to the system.

By Nander Brown
Special to CW‡

The sluggishness of the economy and the high rate of inflation have prompted many organizations to consider the minicomputer as a means of controlling escalating operating costs. Not surprisingly, the mini's low cost is the primary reason for its popularity among firms searching for data processing solutions.

However, before a contract is signed, organizations need to evaluate the necessary changes to their control and security environments.

Minicomputers are often used by small businesses to replace mechanical bookkeeping machines and desk calculators. The processing capabilities offered by minicomputers provide opportunities to increase productivity, control clerical expansion and improve customer service.

At the Federal Home Loan Mortgage Corp., for example, minicomputers are installed at each of the firm's five regional offices. The minis perform in-house processing and communicate with large IBM mainframes located at the company's headquarters in Washington, D.C.

Some Risks

However, minicomputers can pose certain problems and present several unanticipated risks to an inexperienced user.

Primary among these risks are:

- Lack of security for hardware and software.
- Loss of valuable audit trails because key control reports may be overlooked.
- Inadequate backup of data, software and necessary key personnel.

These risks are further complicated by the fact that an organization may use vendor-supplied software packages to automate previous manual operations without considering the need for a completely new set of controls for an unsophisticated user. Some vendors, in their rush to beat the competition, have marketed software that has not been adequately tested.

Minicomputers range from the small, special-purpose computer that processes only one application to a general-purpose computer with processing power comparable to a much larger computer. The typical minicomputer installation can be described as follows:

- It usually operates with a small staff.
- It is often located within a user department and usually lacks physical security.
- The computer's application systems are primarily supplied by manufacturers or software houses.
- The day-to-day operations usually consist of interactive data entry and/or on-line file updates where the majority of input is entered from an on-line terminal and data is validated, verified and balanced on entry; entered by the user department on terminals in user areas; and is accessible for inquiry and direct update.

Internal controls assure the accuracy of DP systems and the prevention of recovery of incorrect or unauthorized operation. As related to software, internal controls are formal mechanisms that provide "checks and balances" to software performance. The adequacy of these controls provides a basis for an auditor to assess the financial condition of a firm since its official records and documents are more than likely processed or retained by a computer system.

Dramatic Changes

Without a doubt, dramatic changes in DP methods have generated a need for more formal internal controls in user application systems. These changes are related to the processing and use of machine-readable records and include source documents, the data processing cycle and the sequence of records and processing activities.

Installing a minicomputer greatly impacts the operation of any organization, but especially a smaller company. Therefore, it is important that managers of smaller firms make a major commitment to audit and control. Unfortunately, most

(Continued on Page 64)

Access Offers Z80-Based System, Runs Under CP/M

WEST SUSSEX, England — Access Matrix Ltd. has introduced a Zilog, Inc. Z80-based microcomputer system called the AM 1200.

The system, which runs under Digital Research, Inc.'s CP/M operating system, can expand from a stand-alone unit to a local network configured with up to 64 terminals, the vendor claimed. In addition, the system has the ability to mix 5¼-in. and 8-in. floppy disk units with Winchester disks and a range of printers — 64 units in all.

The main memory ranges from 64K bytes to 320K bytes and reportedly has a maximum disk storage of 160M bytes.

The system also has remote diagnostics, a software reveal facility for programmers and emulates asynchronous, bisynchronous and synchronous data link control environments, thus allowing terminal local and remote networking capability, the firm said. In the near future, it will reportedly also have the capability to operate in an IBM 3270 information display system network.

The system is priced starting at $4,375.

More information is available from the vendor at Access House, 1-3 Ship St., Shoreham by Sea, West Sussex BN4 5DH, England.

DEC Offers Tape Subsystem For PDP-11/23, PDP-11/23 Plus

HUDSON, Mass. — Digital Equipment Corp. has announced a magnetic tape subsystem for its PDP-11/23 and PDP-11/23 Plus microcomputers that feature up to 46M bytes of unformatted storage capacity on a standard 10½-in. reel of tape.

The Model TSV05 tape unit features front loading and a 1,600 bit/in. recording density on nine tracks using an Ansi-standard format.

The subsystem is said to be microprocessor-controlled and housed in a 40-in.-high cabinet that complements the PDP-11/23 series cabinet. Internally, the unit contains a tape transport, power controller and 21 in. of rack-mountable expansion space, a spokesman noted.

Applications for the subsystem include data interchange, archiving, journaling and disk backup. It costs $9,995 and is scheduled to be delivered in September.

Information on the unit can be obtained from the firm's headquarters at 146 Main St., Maynard, Mass. 01754.

Includes Bisynchronous Interface

Tape System Out for System/34

SYOSSET, N.Y. — General Systems Center, Inc. (GSC) has introduced a magnetic tape system for the IBM System/34 minicomputer that reportedly includes a bisynchronous interface and can communicate with the computer at either 17K byte/sec or 56K byte/sec via its communications adaptors.

The tape system includes a software package said to allow users to read and write files to and from the tape drive and to specify the record and block lengths according to specific needs. The system can be operated without prior programming knowledge, according to GSC.

The unit incorporates a low-inertia tape buffering mechanism, which is said to eliminate the sensitive tension arms and bulky vacuum columns common to most other units. Primary applications for the device include insurance company data exchange, service bureau processing and mainframe data transfer.

The GSC system, with tape utility software package, costs $16,500 from the firm at P.O. Box J, Syosset, N.Y. 11791.

Mini Bits

NEC Introduces Turnkey For Employment Agencies

LEXINGTON, Mass. — NEC Information Systems, Inc. (Necis) has introduced the Automated Search and Placement (Asap) turnkey for professional search firms and employment agencies.

The Asap software runs on the Necis' Astra Model 230 and is compatible with Models 250 and 270 of the Astra series.

Asap features a search/match capacity. Candidates can be classified by as many descriptive categories as required, the vendor said.

A system including processor, operator station, letter-quality printer, 31M bytes of Winchester storage and the Asap software is priced in the $35,000 range. More information can be obtained from NEC Information Systems, Inc., 5 Militia Drive, Lexington, Mass. 02173.

Alspa Subsystem Based On Corvus Disk Drives

SANTA CRUZ, Calif. — Alspa Computer, Inc. has announced a multiuser, hard-disk subsystem based upon Corvus Systems, Inc. disk drives.

The Constellation subsystem reportedly reduces disk access up to 75%. It can support up to eight users sharing storage on a common disk. The subsystem can be used for engineering, program development or production applications, the vendor said.

Disk subsystems cost from $1,995, the vendor said from 300 Harvey W. Blvd., Santa Cruz, Calif. 95060.

Optical Card Reader Aimed At Desktop System Market

SCOTTS VALLEY, Calif. — Mountain Computer, Inc. has introduced an optical card reader for the desktop computer market. The MCI Model 1100A Intelligent Card Reader is said to feature automatic card feeding.

The card reader can, according to the vendor, read pencil-marked and punched cards up to 14 in. in length, automatically feed 200 cards at a rate of 2 card/sec, distinguish marks from erasures, perform diagnostic self-test, send data remotely via a modem, be programmed remotely and provide multiple data conversion methods.

The card reader costs $1,495 from Mountain Computer, 300 El Pueblo Road, Scotts Valley, Calif. 95066.

Apple, Radio Shack Users Get Disk Drive Emulator

ARLINGTON, Mass. — Pion, Inc. has announced the Interstellar disk drive emulator designed for microcomputers, including the Apple Computer, Inc. Apple II and the Radio Shack TRS 80 Model 3.

The unit comes with 256K bytes of storage, which is expandable to 1M byte. The unit can be used as a mass storage device for scientific, educational or business uses requiring disk access, the vendor said.

The unit costs $1,095. Pion is at 74 Appleton St., Arlington, Mass. 02174.

Q-Bus-Compatible Cmos Runs on LSI-11/23 Micro

SUNNYVALE, Calif. — Intersil Systems, Inc. has introduced its IMC-11/23, a Q-bus-compatible Cmos card compatible with the Digital Equipment Corp. LSI-11/23 microcomputer.

The card features 32K bytes of main memory and allows expansion to 18 address lines for memory-management utilization. Up to eight memory cards may be utilized in an LSI-11/23 system, providing up to 128K-byte words of expansion memory, an Intersil spokesman said.

The memory card is available for $895 from Intersil, 1275 Hammerwood Ave., Sunnyvale, Calif. 94086.

Intelligent RAM Board Works on Intel Multibus

LOS ALTOS, Calif. — One/D Co. has announced an intelligent random-access memory (RAM) board that reportedly is compatible with Intel Corp. Multibus systems.

The memory board is available in 32K- to 512K-byte capacities and is capable of supporting up to 1M bytes of addressing for standard 8- and 16-bit microprocessors, the vendor said.

The boards cost from $590 for a 32K-byte model to $1,990 for a 512K-byte unit. The vendor is located at 175 S. San Antonio Road, Los Altos, Calif. 94022.

Cut the Purchase Decision On Minis and Small Business Systems Down to Size

According to International Data Corporation, the market for small systems has become one of the hottest areas in the computer industry today. There's a proliferation of systems to choose from. And it's getting harder to tell the difference between micros, the larger small business computers and minicomputers.

Making purchase decisions has become really tough — each day you delay in purchasing literally means more systems to choose from; more systems to investigate. *Computerworld's* August 30 Special Report on Minis and Small Business Systems is just what you need to clear up the confusion that you're faced with when deciding on the best system to meet your needs.

You'll get comparisons between minicomputer-based and microprocessor-based systems. You'll learn how to make decisions on systems that fit your needs not just for now, but also for the future. And there's more. Take a look at the kind of information you can look forward to in this issue:

- What to watch out for when negotiating contracts with vendors — especially where software is concerned.
- Application stories from users who've travelled the route — accountants, medical people, financial people. You'll even hear users from small mom and pop operations.
- The legal perspective — what happens when you *do* have problems with your contract (with special attention to software).
- A set of guidelines for judging the quality of the advice you're getting so you'll know who to listen to: Consultants? Vendors? Users? Friends of the family?

This *Computerworld* Special Report won't tell you *what* to buy, but it will do an excellent job of telling you *how* to buy. If you're planning to purchase small business systems in the future, you can't afford to miss this special report.

And if you sell to buyers of minis and small business systems, this is where you'll find your best prospects on August 30 — reading *Computerworld's* Special Report on Minis and Small Business Systems. Will the information they get be complete without news of your product? Ad close for this Special Report is August 13.

Contact your local sales representative at one of the offices listed below, or call Don Fagan, Vice President, Sales at (617) 879-0700.

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Brown: Check Mini Security

(Continued from Page 63)

textbooks discuss internal control from the perspective of a large DP organization that can afford the resources to implement traditional controls such as a separation of duties, computer backup and regular audits.

In addition, using commercial software packages presents another interesting control problem. Some packages often deliberately lack sufficient internal controls. They do this in order to appeal to the widest possible market.

As a result, any software package acquired by a small firm may have to be modified to incorporate specific audit controls.

Unilogic's 'Scribe' Helps Prime Users Produce Documents

PITTSBURGH, Pa. — Unilogic, Ltd. has unveiled a document production system that reportedly allows users of Prime Computer, Inc. computers to perform both sophisticated document production and advanced computer-driven photocomposition functions.

Scribe software was designed to allow beginning or advanced users to produce complex written documents. Specializing in the generation of reports, proposals, manuals, financial summaries and book-length manuscripts, it automatically creates indexes, bibliographies and tables of contents, merges text with graphics and produces color slides, the vendor claimed.

Scribe has been specifically adapted for the Primos operating environment and reportedly is fully compatible with files produced by all Prime text editors.

A single-processor license fee for Prime 250-II, 550-II, 750 and 850 is $25,000 at a commercial site and $10,000 at an educational site. It is also available for additional processors at the same site for 20% of the original license fee, Unilogic said from 605 Devonshire St., Pittsburgh, Pa. 15123.

Smart Subsystem Ups Xerox Storage

PHOENIX — An intelligent hard-disk subsystem that increases the data storage capacity of the Xerox Corp. 820 information processor is available from Thought Works, Inc.

The HDO5-XE005 Data Storage Extender reportedly expands the capability of the 820 from 241K bytes to 5M bytes. It is also available in 10M- and 16M-byte capacities (Models HD05-XE010 and HDO5-XE016, respectively). Any combination of the device can be mixed or matched to provide up to 64M bytes of data storage.

It augments the floppy disk subsystem supplied as part of the 820 system, according to the vendor, and it can be fitted to the Xerox machine without hard wiring, which can void the manufacturer's warranty. Interconnection is made by means of a simple interface board that connects to pin rows J-8 and J-11 on the backplane of the 820.

The 5M-byte version costs $2,995; the 10M-byte version, $3,465; and the 16M byte-version, $3,950, Thought Works said from 3532 W. Thomas Road, Phoenix, Ariz. 85019.

Buyers Beware — Hidden Costs Of Owning a Business System Can Far Exceed Purchase Price

By Jody Martin
Special to CW‡

Nobody likes surprises. The cost of owning a business system can far exceed the initial "cost of buying" the business system.

The first of many surprises usually becomes apparent immediately after the equipment has been delivered to the office and the first attempts are made to install the hardware or to "get the system running." What follows is a checklist of questions to get answered before you make your final decision to purchase equipment:

(1) *Who is responsible for installing the product?* The decision maker, the operator, the facilities manager, the DP manager, the owner or the vendor? The IBM Displaywriter is shipped to the customer site in a series of boxes. Someone at the customer site is responsible for plugging all the cables into exactly the right sockets.

(2) *How many components are there?* The Lanier Business Products, Inc. Typemaster is one fully integrated unit (including the printer), and the Xerox Corp. 860 is fully modular with totally separate components. What are the components sizes (especially width and depth)? Where will you put each component?

(3) *What are the clearance requirements of each component?* Some very large pieces of hardware, such as minicomputer CPUs or printers (IBM ink-jet), require 5-ft or 6-ft clearance behind the unit for vendor servicing.

(4) *What are the power requirements for each component?* One of the most unpleasant surprises is to find out after the equipment has arrived that the hardware requires dedicated power lines. This means no other electrical hardware is drawing power from the same circuit. The responsibility for the wiring or rewiring belongs to you, not to the vendors.

(5) *How many separate power outlets will be required for each workstation?* Depending on the type of equipment you choose, you may require wall plugs for the printer, the display/CPU unit, the acoustic sound board and the automatic sheet-feed device.

(6) *How much heat is generated?* Each separate component will generate its own heat, but it's more important to know how much total heat (in BTUs) is generated by the system you are choosing. Because of the noise generated by the printers, the need for a "quiet out-of-the-way place to work" has led to the tendency to place small business machines and word processors in unused or partially filled storage space. This space is typically a small room with one door, no windows and no special provisions for additional air circulation. Some of these rooms don't even have air vents for heating or cooling.

(7) *What are the high/low heat and humidity tolerance ranges for the system?* If you do not have air conditioning or cooling facilities (and even if they only occasionally break down), you need to know at what point the system is likely to begin losing text or malfunctioning due to the conditions of the environment.

(8) *What is the electrical grounding requirement for each of the components?* This could be another surprise cost, since the work must be done by an electrician, not the vendor.

(Continued on Page 66)

Boasts WP, DP on Single System

Univac System 80 Gets 'WPS 80'

BLUE BELL, Pa. — Sperry Univac is offering software that it said enables users of its System 80 to perform both DP and word processing applications on a single system.

WPS 80 is an information processing system designed to provide high-speed editing, formatting and computer processing of form letters and other documents without repetitious typing.

The addition of the 0791 correspondence-quality printer to a Model 2 workstation will reportedly enable high-quality typewritten texts to be prepared with the System 80.

The main menu available on the WPS 80 is said to simplify operator selection of the following functions: word processor, update mailing list, document control, fill in data in form letter, prepare letter to merge, select mailing and merge and print letters.

The WPS 80 software will be available in January. The monthly license fee is $105; an extended term, one-time license costs $5,040.

Univac can be reached through P.O. Box 500, Blue Bell, Pa. 19424.

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Printer Bows For IBM Series/1

MINNEAPOLIS — Control Data Corp. has announced a letter-quality printer for users of the IBM Series/1 minicomputer. The printer uses a daisywheel to print at 55 char./sec.

The Certainty 410 printer is said to provide selectable compressed formats, operator-changeable print wheels and snap-on ribbon cartridges. It can operate with either single-sheet or continuous-form feed and can use six-part forms up to 15-in. wide.

Options for the printer include bidirectional forms tractor feed and a paper-handling basket.

The printer is available for $3,000 from CDC, P.O. Box O, Minneapolis, Minn. 55440.

Edit PAK System II

CRT Terminal-Based WP System Offered

ORLANDO, Fla. — Technology International Corp. has unveiled the Edit PAK System II, the second entry of its family of CRT terminal-based word processing systems.

The system reportedly features a 12-in., 21-line CRT monitor, detachable keyboard, 40 char./sec letter-quality printer, 64K-byte working memory and full word processing software.

Features include automatic centering, decimal alignment, line return, right-margin justification, underscoring and bold-face printing. Other features include automatic pagination, wraparound and discretionary hyphenation.

In addition, the Edit PAK System II offers text deletion by character, word, line, paragraph or page and text insertion at any location and automatic text merging.

The system costs $4,995 from Technology International Corp. at 9715 Orange Ave., P.O. Box 13457, Orlando, Fla. 32859.

Tecmar Processor Expands Olivetti M20 Personal Computer

CLEVELAND — Tecmar, Inc. has unveiled its 8086 Alternate Processor for the Olivetti Corp. M20 personal computer.

The APB 1086 reportedly expands the M20 by adding an Intel Corp. 8086 microprocessor with CP/M-86 or MS-DOS to the M20's standard Zilog, Inc. Z8001 processor and Olivetti proprietary Pcos operating system.

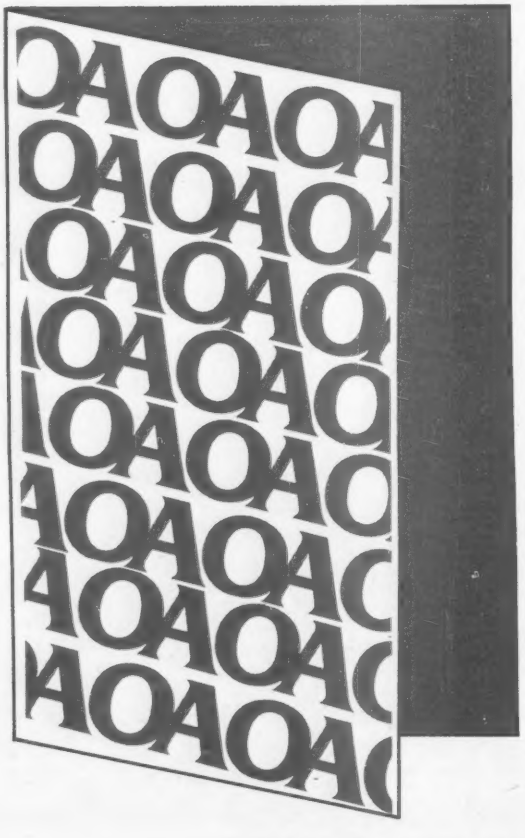
An M20 basic unit featuring the Z8001; 128K bytes of memory; one double-density, double-sided mini floppy disk; full 16-bit data bus; and a 12-in. monochrome monitor, costs $2,695.

Other standard features include five expansion slots, RS-232C serial interface and a parallel printer interface.

Tecmar is located at 23600 Mercantile Road, Cleveland, Ohio 44122.

Coming up in *Computerworld OA*

Selling Office Automation to Your Organization



The next issue of *Computerworld OA* will focus on selling office automation within an organization. This special report will feature the human angle of office automation and highlight the strategies of selling the concept of OA to top management and end-users in an organization. You'll see articles on implementation techniques, feasability studies, human interface, ergonomics and productivity.

And, of course, you'll see several articles on current happenings in all aspects of OA.

There will be bonus distribution of this issue to attendees of the Info '82 Show in New York this October. So, if you're a supplier of OA products and services, you won't want to miss the opportunity to advertise in *Computerworld OA's* next issue.

The issue date is September 29th. The deadline date to remember is August 20th for space reservations. (Materials are due August 27th.)

For more details on *Computerworld OA* and the people who read it, just contact your local *Computerworld* representative, or call Bob Ziegel, Vice President at (617) 879-0700 for all the information.

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Buyers Beware Of Hidden Costs

(Continued from Page 65)

(9) *What is the cabling requirement for each component?* You need to know the maximum distance each terminal or component can be from the CPU and exactly what extra costs are involved. Most vendors have a maximum of 2 feet to 8 feet as "standard" cabling and charge $1 to $25 for each additional foot of cabling (in minimum lengths of 25 feet).

(10) *What supplies (print wheels, ribbons, diskettes, starter kits) come with the system?* What is the cost of each of the individual supplies? Most vendors do not include a starter kit of supplies with the system installation, but will make recommendations for a starter set as part of your purchase price.

(11) *What supplies are not open-market items — in other words, what supplies can be obtained only through the vendor?* Generally, print wheels and diskettes are the culprit here, since the vendor may be using proprietary software, or have a copyright on the print wheel design or just use different character positions on the print element from other "more commonly available sources."

(12) *What additional supplies are recommended, required or just nice to have?* If you plan to use tractor-feed or pin-fed platens, do you have the basket trays (front and back) for feeding and catching the paper ($3 to $50)? Will your system require, (or your vendor recommend) antistatic mats under the operator chairs ($12 to $100)?

(13) *Who is responsible for training people to operate the system? How many operators will the vendor train? What are the charges for vendor training of additional operators? What other training classes are available through the vendor and what are their costs?*

Let the buyer beware. The cost of owning the equipment can far exceed the cost of buying the equipment in the first place, and a potential buyer should well keep his eyes on the hidden costs as well as the "list" price.

Martin is director of the Pacific Institute, in Newbury Park, Calif.

Xerox Splits Office Products Division

STAMFORD, Conn. — In a move to position itself more strongly in the office automation systems business, Xerox Corp. recently created out of its Office Products Divsion (OPD) a new Office Systems Division (OSD) that will stress sales of Ethernet-based systems to end users.

Donald J. Massaro, a corporate vice-president and former president of OPD, will head the new division, which will be located in Palo Alto, Calif. William C. Jackson Jr., former vice-president of OPD, was appointed president of that business unit.

Both Massaro and Jackson will continue to report to John V. Titsworth, executive vice-president of Xerox and head of the Information Products Group.

Over the past couple of years,

(Continued on Page 68)

Fed Approves Citicorp's Application To Offer DP/Telecommunications

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Federal Reserve Board has approved the application of Citicorp to offer sophisticated DP/telecommunications services through a new subsidiary. The application had been opposed by the Association of Data Processing Service Organizations, Inc. (Adapso).

However, both Citicorp and Adapso proclaimed themselves satisfied with the July 9 Federal Reserve Board ruling — Citicorp because it received the green light to increase its DP services business and Adapso because the ruling placed certain limitations on the new Citishare subsidiary and did not amend banking regulations to give all bank holding companies carte blanche to enter the services field.

Proposed Citishare offerings include financial time-sharing, electronic funds transfer and home banking services; provision of packaged financial systems, including hardware and software; and selling excess capacity on Citishare DP and telecommunications facilities.

Adapso had argued before the Federal Reserve Board that the services were not closely related to traditional banking activities and were therefore not allowed under national banking laws and regulations. A federal administrative law judge, who held hearings on the matter, ruled in March that the services were permissable and beneficial to the public. He also recommended that the Federal Reserve Board amend the relevant banking regulation to specifically permit such services [CW, April 12].

The board, however, although it approved the Citishare proposal with some restrictions on the types and extent of its DP/telecommunications services, did not address the recommended regulation changes.

Ruling Better Than Expected

Adapso President Jerome L. Dreyer said that the board ruling two weeks ago was better than the association had expected, given the recommendations of the administrative law judge. "We had anticipated, quite frankly, a quite disastrous decision," he said.

Dreyer said that Adapso had never opposed Citicorp's entry into the DP services field but had been concerned only with the market impact of its entry. The board-imposed restrictions addressed a number of Adapso concerns, he indicated.

"There are plenty of restrictions," he said, noting for ex-

(Continued on Page 72)

Regional Report

Desert Blooms With High Tech

By Robert Batt
CW West Coast Bureau

PHOENIX — They call it the Silicon Desert. Strategically placed within easy reach of the West Coast, the arid Arizona landscape is rapidly emerging as fertile ground for the computer industry.

Faced with a critical shortage of space in more traditional zones such as Santa Clara Country, Calif., and frustrated by the constant job swapping of skilled employees to competitors, many companies are now setting up shop in more remote locations.

Arizona, with its vast acres of land calling out for development, has become a prime target for companies looking to expand existing operations or transfer whole divisions away from traditional headquarters. Development is taking place at break

(Continued on Page 78)

Cities like Phoenix and Tuson, Ariz., Colorado Springs and Boulder, Colo., Sacramento, Calif., Austin, Texas, and Raleigh, N.C., are fast becoming the favored spots of high-technology firms that want to locate new facilities in places with more available and less expansive labor, cheaper housing and lower commercial land costs.

These new areas accounted for approximately $3 billion of computer-related production in 1980. In the next 10 years, they are expected to account for $12 billion to $14 billion.

In this, the second of Computerworld's *occasional series on rapidly growing regions of computer technology, we focus on Arizona and Colorado.*

Rockies Enjoying Silicon 'High'

By Robert Batt
CW West Coast Bureau

DENVER — If Arizona has acquired the reputation of being the Silicon Desert of the Southwest, then arch-rival Colorado can lay claim to the title of Silicon Mountain.

Lying at the foothills of the snow-capped Rockies, the area composed of Denver, Fort Collins, Boulder and Colorado Springs has given rise to a multitude of computer and computer-related companies. A recent study estimated that the state now contains more than 700 high-technology firms including such well-established vendors as IBM, Storage Technology Corp. (STC), Digital Equipment Corp., NCR Corp., Honeywell, Inc. and Hewlett-Packard Co.

(Continued on Page 76)

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Computer and Related Equipment Revenues

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Slumping mainframe and terminal sales for U.S. computer manufacturers were offset last year by increased shipments of personal computers, graphics terminals and other products, leading to a 19.5% overall industry sales hike in 1981, the Electronics Industry Association (EIA) said recently.

The association's annual electronics industry *Market Data Book* noted the effect of continued high interest rates on large purchases but reported industry sales totaled $27.7 billion in 1981, compared to 1980 sales of $23.1 billion. The EIA also cited other statistics that placed U.S. consumption of DP systems and peripherals at $33.9 billion last year.

Total 1981 mainframe sales — digital and analog — were $9 billion, up 18% over the 1980 figure of $7.7 billion. The EIA book stated that "in addition to being affected by recessionary trends, mainframe computers are facing increased competition from sophisticated, high-capacity minicomputers and microcomputers..

"The lower cost and added convenience of small computers are encouraging purchases of distributed processing systems in lieu of mainframes," the association noted. It also pointed to a trend of steadily decreasing market share for mainframes, from a high of 80% of computer sales in 1976 to about 33% in 1985.

The publication also documented the slowed growth in conventional minicomputer sales in the face of the approximately 40% annual growth in supermini sales.

Further Growth Likely

"Thirty-two bit superminicomputers are benefiting from new highs in price/performance ratio. U.S. sales grew from an estimated $500 million in 1980 to $650 million in 1981 and could expand by more than 50% in 1982, according to some analysts," the EIA said. The association added that other estimates put last year's supermini shipments at $300 million with an expected increase of as much as 60% this year.

The value of U.S. small business computer shipments worldwide rose from

Xerox Splits Office Units

(Continued from Page 67)

Xerox said, it became apparent that OPD was focusing on two separate business areas, an office systems unit and a stand-alone office products business with primary sales to resellers. Spinning off the new division recognizes these separate lines of business, Xerox said.

While Xerox declined to comment extensively on the divisional split or the profitability of its office products business to date, the firm did say that it considers the office automation networking portion of the office automation business to be the major opportunity in the field.

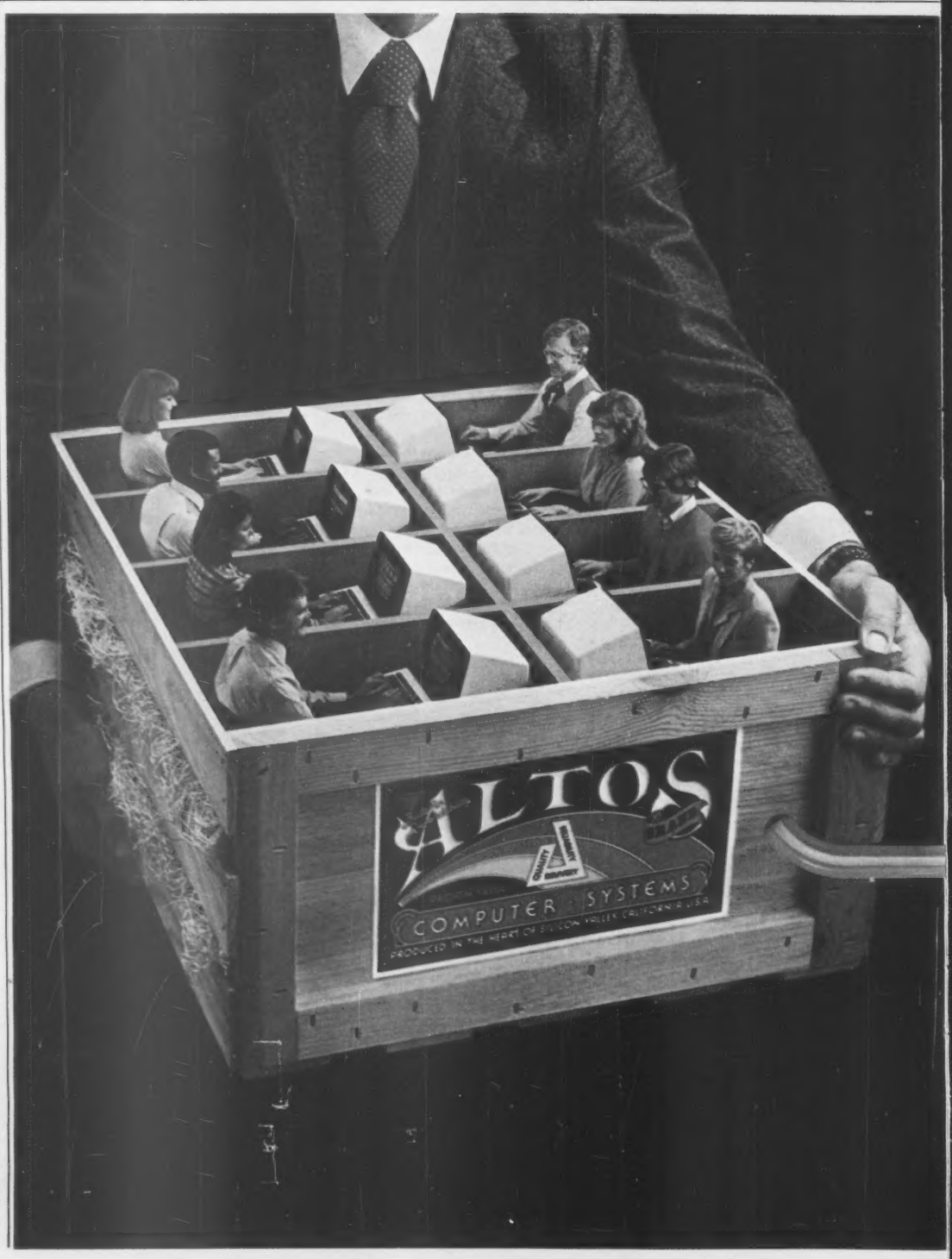
Since the Ethernet operation was already located on the West Coast, Xerox said, it made sense to locate the new division in that area.

The products included in the fold of OSD include the Star 8010 professional workstation, the 860 word processor and 820 personal computer along with a variety of interconnect equipment, Xerox said.

While the old OPD will market the 820 and 860 along with facsimile equipment and other office products, it will not offer the Star professional workstation.

The latest shift in the office products strategy appears to be an outgrowth of an earlier policy difference Massaro reportedly had with other executives at OPD over the thrust of the 820 personal computer.

Last April four executives hastily departed OPD reportedly because they wanted to stress retail sales of the 820 while Massaro wanted to push for selling the 820 into major accounts. At that time Massaro said that retail sales of the 820 were doing poorly while direct selling of that unit was doing well.



Mark Gains in 1981 Despite Bad Economy

$5.1 billion in 1980 to about $6.4 billion in 1981, according to one set of statistics cited in the EIA document, with projected annual growth of nearly 25% through 1985.

U.S. sales of desktop computers reportedly topped the $1 billion mark in 1980, with more than 50% earmarked for business applications. "Industry observers expect sales to exceed $9 billion by 1985, including 70% from the business sector," the association said, adding that according to one report, "unit shipments of desktop computers to the business and professional sectors totaled 211,000 in 1981."

Turning to software, the EIA said that shipments to the domestic market totaled $2.3 billion in 1981, up 33% from $1.7 billion in 1980, and will reach $3.1 billion in 1982. "Some analysts predict that the market for microcomputer software alone will approach $2 billion by 1985 and skyrocket to $25 billion by 1990," the book added.

On peripheral equipment, the association quoted Commerce Department figures showing U.S. factory shipments of storage equipment, I/O devices, terminals and digital communications interface equipment exceeded $13 billion last year. "Growth in distributed data processing has fueled demand for peripherals, but some market analysts anticipate a growth rate of only 15% in 1982 sales, down from the 21% growth rate experienced in 1981," the report said.

After discussing the expected market activity for various types of peripheral equipment, the EIA data book also detailed the surge in sales of office automation, word processing and computer graphics equipment as well as on-line data base services, robotics and specialized computer equipment. In-depth statistics on communications equipment and services are also provided.

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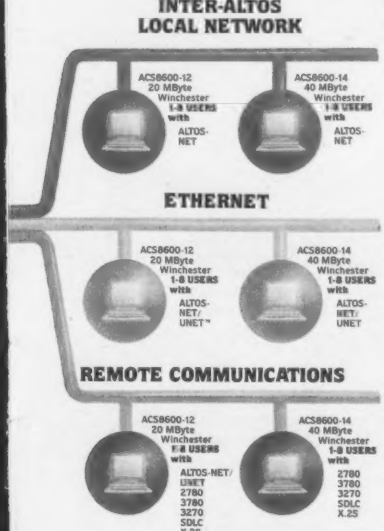

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EIA Reports U.S. Exports Increase

WASHINGTON, D.C. — U.S. factory shipments of electronic equipment, systems and components totaled $113.8 billion in 1981, an increase of 10.4% over the 1980 total of $103.1 billion, the Electronics Industry Association (EIA) reported in its annual industry report.

Sales of computers and related products sold to commercial markets accounted for 38.2% of the industry total. Sales during 1981 sales in this category were $43.5 billion, a 16% increase over 1980's figure of $37.4 billion, the association said.

Communications equipment and systems accounted for 30.4% of the total electronics industry shipments, with sales estimated at $34.5 billion in 1981, up 13% over the 1980 total of $30.6 billion. Factory sales of electronic components totaled $25.4 billion last year, an increase of 4.5% over the 1980 sales figure of $24.3 billion.

Consumer Electronics

In the consumer electronics category, EIA reported a 5.6% increase in factory-level sales, with the 1981 total reaching $11.4 billion, compared to 1980 sales of $10.8 billion. Consumer electronics accounted for 10% of total industry sales last year.

An estimated 1,605,600 persons were employed in electronics manufacturing and related activities in 1981, according to the association, representing a 2.3% increase over the 1980 total of 1,570,000.

U.S. exports of electronics products came to $23.6 billion in 1981, and imports totaled $19.7 billion, resulting in a balance of trade surplus of $3.9 billion, the EIA said.

The 1982 Electronic Market Data Book, containing 126 pages of facts, figures, charts and graphs on computers, communications, consumer electronics, government electronics, world trade, employment and R&D, is available for $55 from the EIA Marketing Services Department, 2001 Eye St. N.W., Washington, D.C. 20006.

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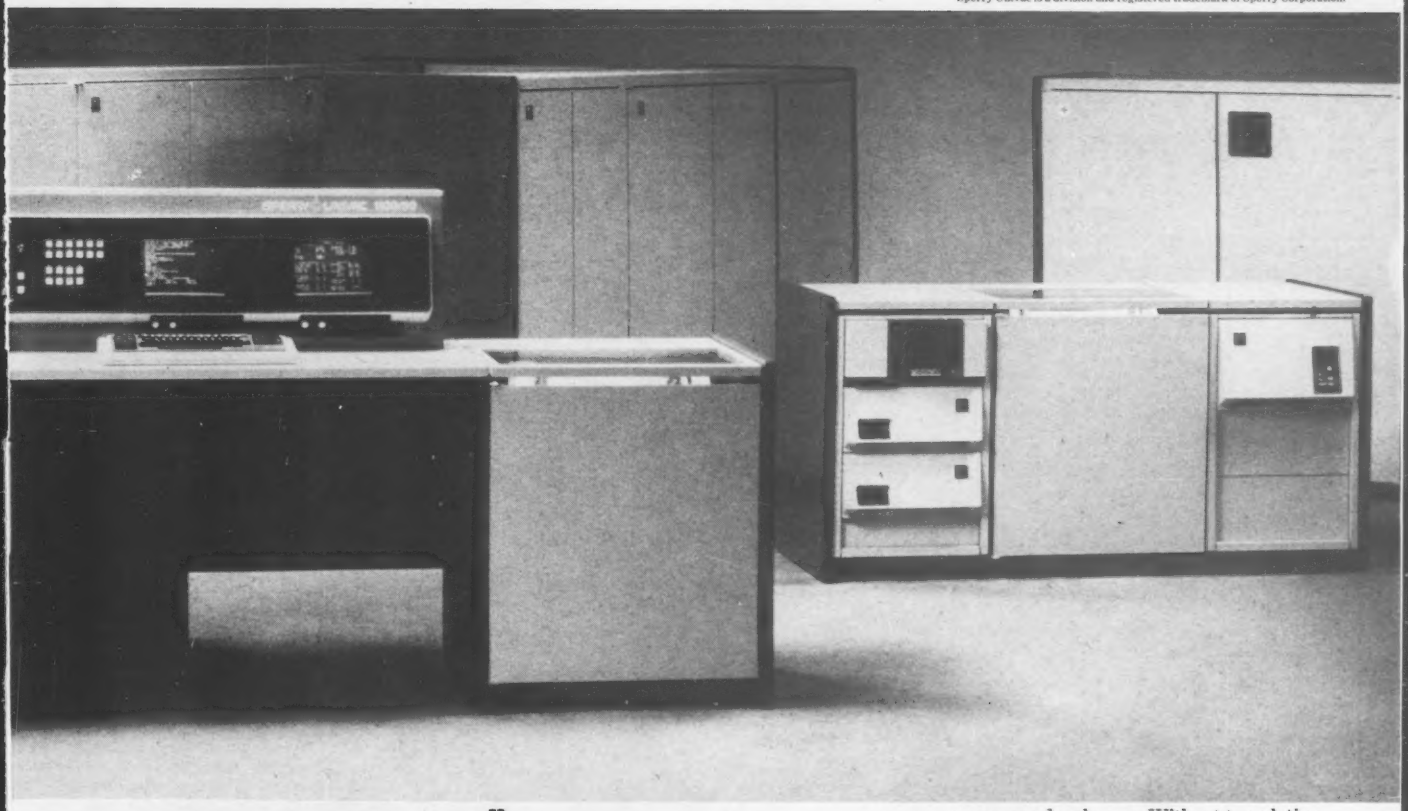

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Japanese, Europeans Already Started

OTA Urges Federal/Private Satellite Effort

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — A joint government/private-sector effort to develop advanced communications satellite technology is urgently needed, according to the Office of Technology Assessment (OTA), an analytic agency of the U.S. Congress.

In a recent report, entitled "Civilian Space Policy and Applications," OTA points out that "the Europeans and the Japanese are already developing 30/20 GHz systems heavily subsidized by their governments."

There is a "virtual certainty that foreign systems will come on-line sometime in this decade." And if that happens, the agency believes that the United States, unless it soon launches a sizeable research and development effort, will lose an important market, along with its present lead in communications technology.

The agency blames our failure to exploit the 30/20 GHz band primarily on lack of "a consistent policy to assure coordination of military, civilian and industry efforts. This absence of clear vision will again become a problem as large communications space platforms become possible in the 1990s. Large communications platforms could support large multibeam antennas and the associated switching electronics needed for vastly-expanded point-to-point services."

Another reason for developing the 30/20 GHz band, OTA said, is that existing satellite communications capacity, located within the 4- to 6- and 12- to 14-GHz bands, will prove insufficient. The agency quotes projections by the National Aeronautics and Space Administration (Nasa) which show that these bands will be saturated by about 1994. "An important consideration is that crowding of the geosynchronous orbit and the radio spectrum has led to international political problems that the private sector cannot resolve on its own. Accelerating the availability of 30/20 technology could render these problems more tractable."

More Funding

One way to assure that the present U.S. lead in space technology continues is to provide Nasa with more funding, OTA said.

In 1973, the agency pointed out, largely because of industry pressure, Nasa began to phase out its advanced satellite communications research program. But by 1977, again as a result of industry pressure, a small program was reinstituted and is continuing. This program isn't adequate, however, the agency indicated.

There should also be private sector participation, particularly since "several companies are doing some work near 30/20 GHz for the military," OTA said. It concluded that "a joint public/private demonstration project, with substantial financial participation from several corporations might be possible and desirable."

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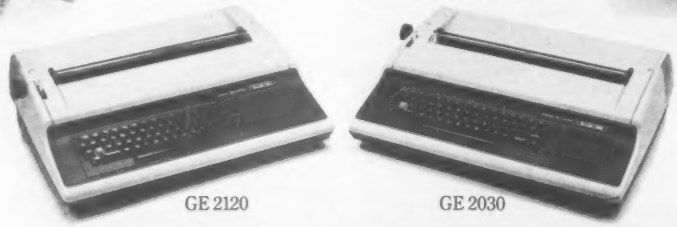

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GENERAL ELECTRIC

Fed OKs Citicorp Bid

(Continued from Page 67)

ample that the Federal Reserve Board said "Citicorp should take the technical steps necessary to ensure that its facilities are operated only with respect to banking, financial and economic data."

Dreyer went on to say that the association would have liked the Federal Reserve Board to decide once and for all what the banking regulations allow in the area of DP services. "Further clarification would have helped everyone," he said.

Dreyer also said that Adapso may approach the federal appeals court here to challenge those parts of the Federal Reserve Board decison with which the association still disagrees.

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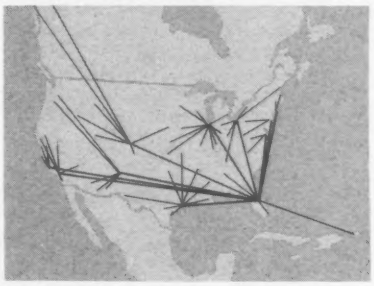

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U.S. DP Trade Surplus Dip Laid to Lower EEC Imports

WASHINGTON, D.C. — The U.S. trade surplus in computer and business equipment experienced a modest dip during the first quarter of this year primarily because of lower exports to the European Economic Community (EEC) and because of a sharp increase in imports from Japan, according to recently released industry statistics.

Exports of computers and business equipment for the first quarter rose only one-tenth of 1% to $2.6 billion, while imports during the period rose 23% to more than $1 billion, according to figures released by the Computer and Business Equipment Manufacturers Association (Cbema).

This resulted in a positive U.S. trade balance of $1.59 billion for the quarter, a decrease of 10.6% from the surplus experienced during the first quarter of 1981. This is the first quarterly decrease in the trade surplus since the first quarter of 1976, Cbema reported.

However, the trade surplus was attributed entirely to the excess of DP exports over imports. However, imports of DP equipment during the reporting period rose nearly 32% to $470.8 million, while the $2.1 billion in exports of these products remained about level with the first quarter of 1981.

Imports of DP equipment from Japan rose 10.6% to $155.2 million from the prior year's period, while exports of equipment to Japan rose only 3.2%, totaling $188.3 million.

Japan and Taiwan are the only two nations with which the U.S. has a trade deficit in computers and business equipment, Cbema noted but currently, the trade deficit is in business equipment rather than DP products.

On the European trading scene, countries in the EEC increased shipments of computers and business equipment by 4.3% during the first quarter, while U.S. exports of that equipment to EEC countries declined 4.4%.

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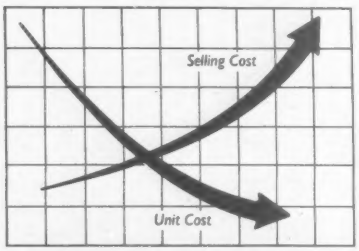

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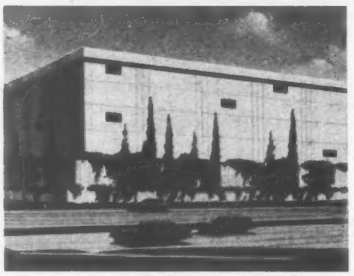

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Mergers & Acquisitions

Data Systems for Industry, a subsidiary of IMS International, has acquired a majority interest in **Systech, Inc.** of Countryside, Ill. Management in both companies will remain the same.

Business Data Processing, Ltd. and **Data Conversion Services, Ltd.** have merged operations. Each company will maintain its corporate name and structure, with Business Data specializing in data entry and Data Conversion in providing both batch and online data processing.

Computer Network Corp. has acquired the assets and more than 40 nursing home customers of **Data Systems Consulting Corp.**

National Computer Maintenance, Inc. has acquired the maintenance accounts formerly administered by **Sun Maintenance, Inc.**

Dasd Corp., the U.S. member of the Cap Gemini Sogeti Group, has signed an agreement to purchase all the authorized stock of **Spridellis & Associates, Inc.**

Computer & Communications Technology Corp. (CCT) and **Rotating Memory Systems, Inc. (RMS)** have signed a letter of intent for the merger of RMS into CCT, subject to the approval of the boards of directors of both companies and the shareholders of RMS. Terms of the agreement were not announced.

Part of 'EDP Auditor'

Sage Acquires Cullinane 'Cars'

BETHESDA, Md. — Sage Systems, Inc. here has acquired the Computer Audit and Report System (Cars) and EDP Auditor/3 from Cullinane Database Systems, Inc. The two packages are part of Cullinane's EDP Auditor system, but do not operate in the high-end IBM market in which lies Cullinane's major product line.

Sage Systems has been working with Cullinane on maintenance and feature enhancements for the past year, according to Harold Daniels, Sage Systems' director of corporate marketing.

Cars, designed as a report writer for auditors, operates on systems from Wang Laboratories, Inc. and Burroughs Corp. EDP Auditor/3 operates under IBM's System/3.

Daniels declined to comment on the price of the acquisition, but said that the firm would make payments to Cullinane over the next few years. There are currently about 200 licenses for Cars, with 420 users.

The product is estimated to have brought in about $900,000 in revenue during Cullinane's last fiscal year.

Two of Cullinane's support people for the product have joined Sage Systems.

Cullinane said that it was not contemplating divesting itself of any other products.

New Companies

United Word Processing, Inc. has opened a word processing training and service center, offering operator training, consulting service, glossary and DP development service, job placement service and word processing/typing service. It is located at 129 Middlesex Tnpk., Burlington, Mass. 01803.

Advanced Technical Services Franchising Corp. is a new subsidiary of Advanced Technical Services, Inc. (ATS), a firm providing assembly and manufacturing services for electronic firms in northern California. ATS will provide its franchise owners with training programs and business leads in the industry. Each franchise will be operated independently using ATS technology, manufacturing and quality control systems as well as the ATS name. More information is available from Advanced Technical Services, Inc., 2241 Paragon Drive, San Jose, Calif. 95131.

Expansions

Nestar Systems, Inc. is moving its Operations Division from its corporate headquarters to a newly constructed 8,000-sq-ft facility at 2686 E. Bayshore Road, Palo Alto, Calif.

Compuscan, Inc. has opened new corporate headquarters at 81 Two Bridge Road, Fairfield, N.J. The expanded facilities are expected to house corporate offices and sales, service and marketing departments.

DMA Systems Corp. has relocated its headquarters and manufacturing operations to larger facilities in Goleta, Calif.

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The 2623 has two independent memories—for graphics and alphanumerics—so you can talk to your computer without disturbing your graphics display. And if you need hard copy, the thermal printer can dump it out in less than 40 seconds.* The HP 2623 works with computers from most major manufacturers. But no matter what system you use it with, HP's worldwide service organization can provide you with the advice, documentation and support you need.

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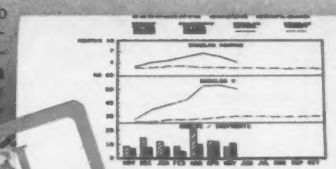

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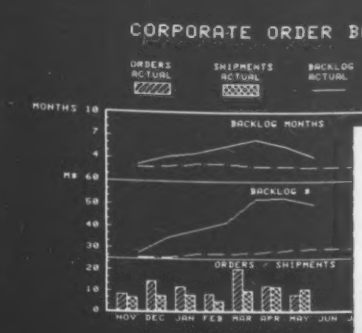

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42103 HPT50

Colorado Rockies Enjoying Silicon 'High'

(Continued from Page 67)

Apart from the mainstream computing companies, the semiconductor industry is represented through enterprises such as Mostek and Inmos, the British-owned concern that chose Colorado Springs as its U.S. base.

The importance of these companies in the economic life of Colorado has been recognized by the state government, which is attempting to continue the influx of high tech in a number of ways. These include a plan to establish a high-technology institute to support research and development and material assistance to computing companies in the region.

A proposal in the state legislature creating the institute — estimated to cost $25 million — was recently referred back to a special interim committee for further investigation. The state government is also starting a small business loan program in October to encourage startup companies or those that wish to expand.

In his State of the State address earlier this year, Colorado Governor Richard Lamm proclaimed: "We must act now to prepare Colorado for the 21st century. Colorado's economic health will be guaranteed for the indefinite future if we continue to attract those high-technology industries we are already attracting. They are ideally suited to the advantages Colorado has to offer. They are neither water-intensive nor heavy polluters of the air."

Shot in the Arm

The year 1972 was a vital one in the growth of computer vendors in Colorado. In that year, IBM decided not to build tape drives, giving a major shot in the arm to an entrepreneur, Jesse Aweida, who had left IBM to form his own company, STC — now a billion-dollar concern. Today STC employs 8,500 people and is Colorado's third largest private employer.

STC's example has clearly been an inspiration to other budding entrepreneurs and a whole host of smaller companies have sprung up, often, as in the case of word processing manufacturer NBI, by ex-STC employees.

"Any company that gets as big as we are is going to lose people and it's foolish to think otherwise," said Rick Baldacci, STC manager of employment at the company's Boulder headquarters. "People come here to experience new technologies. They get the confidence to go out on their own and run their own businesses and so inevitably our presence leads to spin-offs," he added.

Success Breeds Success

Success certainly breeds success and the presence of two companies such as IBM and STC has given the region a reputation for being one of the new technological hotspots of the future.

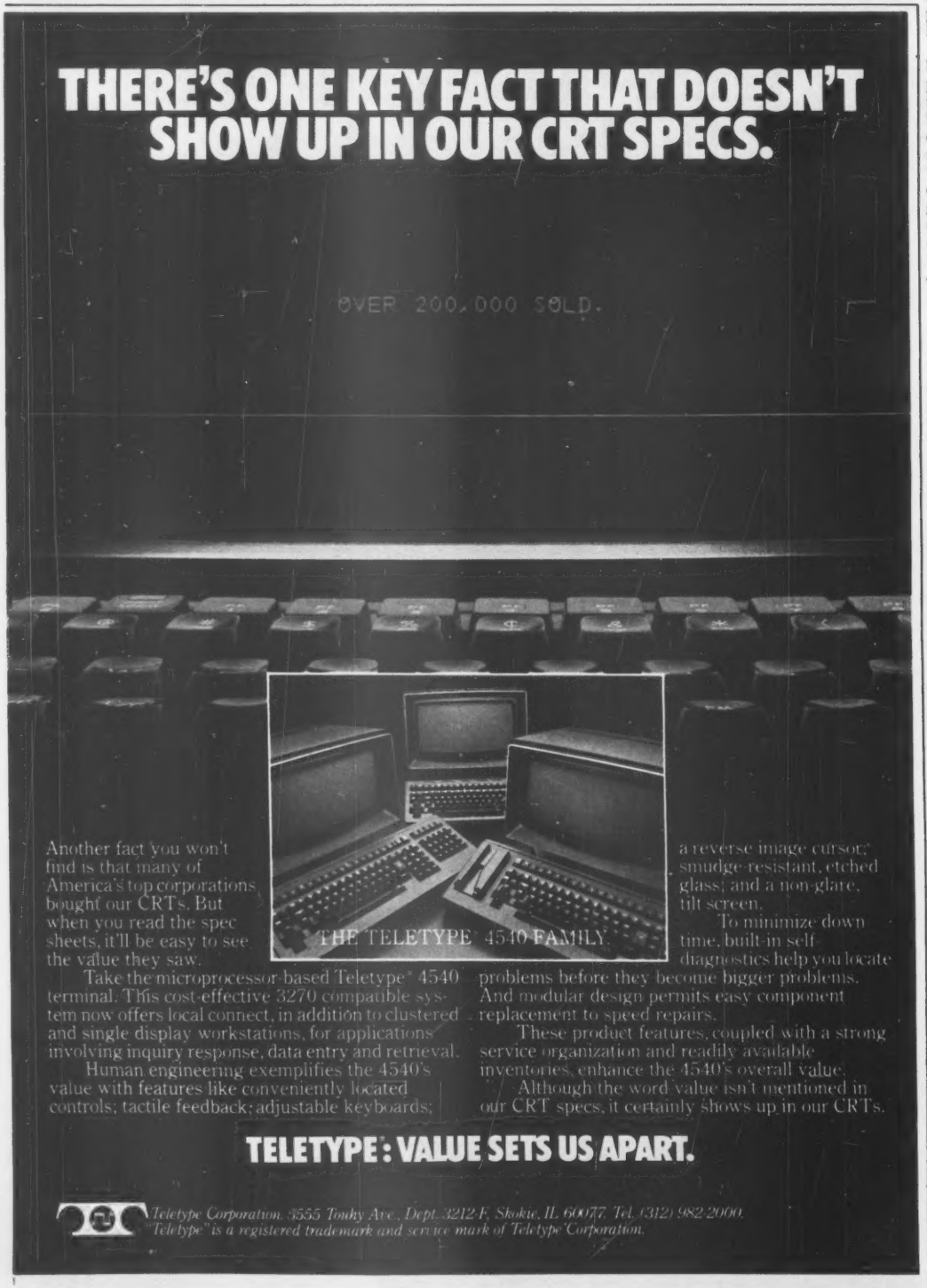
Companies such as the Denver-based Auto-trol Technology Corp. — specializing in computer-aided design and manufacturing — and Ibis Systems, Inc. — manufacturer of disk drives in Boulder — are carving out formidable reputations in their respective fields in the wake of the ground prepared by the bigger companies.

The state also has its share of tiny computer companies eking out a living by concentrating in a specialized sector of the market — for example, Language Resources, Inc., which manufactures Pascal compiler systems and microprocessor software development tools.

Brian Doyle, marketing director at Sigma Design, Inc. in Eaglewood commented: "There are an enormous number of computing companies springing up — companies with 15-20 people that most of us have never heard of."

This is not to say Colorado does not have its problems. There is still a lack of academic institutions capable of supporting a high-tech growth environment — hence the emphasis on a high-technology institute.

Universities in the state are unable to meet the demand for specialized labor such as highly skilled programmers and analysts. Thus companies, such as STC, recruit 60% of such people from outside the state.



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—Senior Systems Analyst

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—Manager, Technical Services

"Our users are amazed at the quick, reliable, and accurate information MICS gives; questions can now be answered in as little as a half hour. When our users are asked where they would be without MICS, they quickly answer, 'We'd be out of business relative to computer services.'"

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Arizona Desert Blooms With High-Tech Industry

(Continued from Page 67)

neck speed around Phoenix and Tuscon, with the former now the ninth largest city in the nation.

The region boasts some of the industry's major players. IBM, Digital Equipment Corp. , Honeywell Inc., NCR Corp. and semiconductor giants like Intel Corp. and Motorola, Inc. all have significant investments in Arizona.

A warm climate, availability of land, a good investment environment, plenty of outdoor life and a willing labor force have all combined to make this sunbelt state an attractive option for a fast growing industry.

"With the software and semiconductor firms coming in here, I see us rivaling Silicon Valley in the not too distant future," said Mike Lehrer, chief executive officer of Thought Works, a Phoenix-based microcomputer company.

"Companies from the East are coming to Arizona rather than going to California with its overpopulation of industry and high living costs," he added.

Certainly computer-related technology is on the rise in Arizona. Already high-technology manufacture represents a 38% share of total manufacturing employment in the state, making a major contribution to the Arizona economy. This is five times the national average.

In 1980, the high-tech industry employed around 60,000 people in the state and had a shipment value of $3.59 billion.

Despite the attractiveness of Arizona, there is still much to be done if the state is to become the new hotbed of technological innovation.

Dearth of Suppliers

For a start, the region has a dearth of computer industry suppliers. Overall, less than 10% of all purchases made by the computer and electronic component sectors are purchased in-state, according to a report for the State Office of Economic Planning and Development. "Arizona has a relatively new manufacturing base and is not as large or diversified as other more mature economies," the report said.

Early growth of Arizona's computer industry was dependent on the development of a few large companies such as Motorola, which has been in the region for more than 30 years. With the upswing of the entire industry after 1975, Arizona quickened its pace of growth and strong efforts reportedly are now being made to promote the state as a major technology market, with emphasis on research, development, educational training, suppliers and production.

The state government has taken an active role in this process through a competitive tax structure and the making available of a vast array of site locations to meet all sizes of industries.

Major Factor

Both the availability of such land mass and its relatively cheap price was a major factor in IBM's decision to locate in the region. From the state's point of view the investment has paid off handsomely. IBM is now Tuscon's biggest employer with more than 5,000 people on its payroll. This is expected to expand to 6,000 by early 1984.

The state is also making extensive efforts to meet the nationwide shortage of computer engineers and technicians through the establishment of a $32 million Center for Excellence in Engineering at the state university. Private-sector funds are also involved in this project.

All told, there are 146 high-technology manufacturers in Arizona, of which 14 currently employ more than 1,000 people. The infrastructure now exists for the state to make a rapid takeoff in future computer development.

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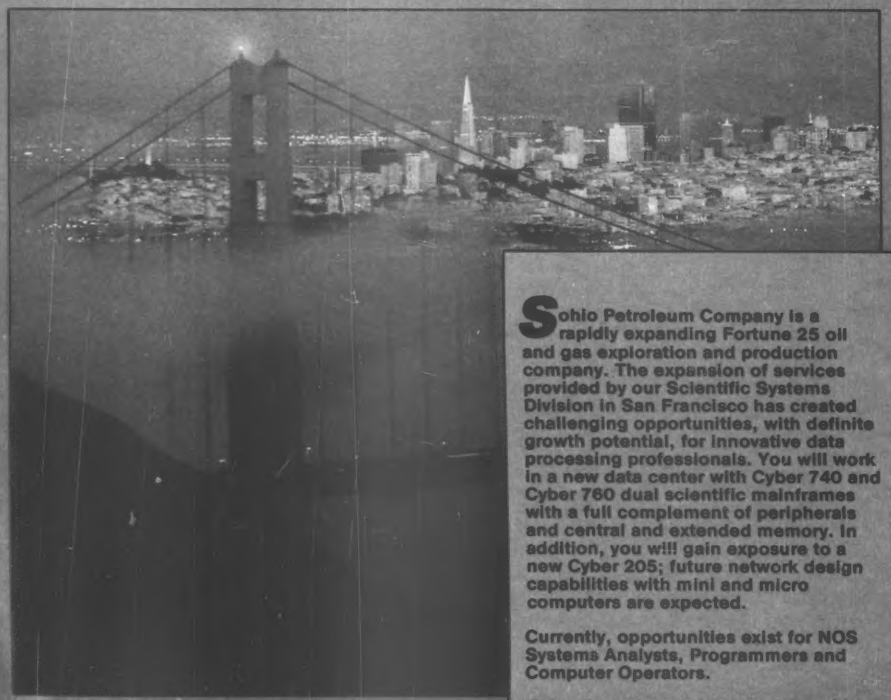

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One of Fastest Growing States

High Tech Swelling Arizona's Population

By Robert Batt
CW West Coast Bureau

PHOENIX — Amid the stretches of desert in this southwestern state, whole towns are springing up as computer technology lays down its roots in areas previously left barren by nature's forces. In Tempe, Chandler, Mesa and Scottsdale, DPers commute to work, taking mere minutes to get from desert to downtown.

Thanks in large part to high-technology growth, Arizona's current population of under two million is expected to soar by 29% over the next decade, making it one of the fastest growing states in the union. This compares with the 11% rise projected for the entire U.S. by the Commerce Department.

High-tech companies whose prime raw materials are brains can afford to locate anywhere and they often choose to cluster within small communities where their highly prized talent often choose to live.

Take Flagstaff, for example, in the state's northern region. This town of 35,000 saw 8,000 people move in during the 1970s, attracted by its picturesque lakes, canyons and thickly forested mountains.

Another example is Chandler. Ten miles out of Phoenix, it is Arizona's fastest growing town. Companies such as Intel Corp. employing 2,000 to 3,000 people are transforming this stretch of desert into a major development oasis.

The entire Phoenix valley is experiencing similar expansion. Companies attracted by a good supply of labor and the proximity of other technology-related firms, are seeing the Phoenix metropolis as a natural spillover from California's Silicon Valley.

Competition a Plus

Having competitors in town is making it easier for companies like Intel, the recognized technological leader in the semiconductor industry, to entice engineers away from the California stronghold.

"Engineers are a different breed of people," claimed Vaemond Crane, vice-president at the Chandler plant. "They won't move to a place where there are no other engineering opportunities."

The Chandler move is the second major relocation for Intel. The first was to Portland, Ore. "We find it a lot easier to expand our labor base outside of Silicon Valley," Crane said.

The company currently has three assembly plants in Arizona and is planning to move its Commercial Microsystems Operation Division from California to the Deer Valley plant next month.

One of the key ingredients in persuading Intel and other established computer firms to move to the desert is the strong efforts being made to train the labor force required to meet such a commitment.

Arizona, like other areas in the country, will need to meet this shortage if high-technology development in the state is to continue. According to the Office of Economic Planning and Development (OEPD), in 1980 the state's high-technology manufacturers employed almost 6,000 technicians. By 1985, the OEPD estimates that 695 new technicians a year will be needed just to keep up with comparable growth rates of the last five years.

Major Deterrent

A shortage of engineers is the major deterrent to new companies coming into the state. Of the 800 or so high-technology engineers that graduate from Arizona colleges and universities every year, almost half leave the state to work elsewhere.

It is imperative that this shortfall be made up, state development experts say, and so local government is making a concerted effort to develop strong links between the business and educational communities.

The local universities, Arizona State, The University of Arizona and Northern Arizona University have all made efforts to upgrade their engineering departments.

Thirty-two million dollars have been earmarked to expand the engineering school at Arizona State University (ASU) in Tempe to include a "Center for Excellence in Engineering." This is a five-year funding program with over $20 million raised within the first two years.

The University of Arizona College of Engineering in Tuscon also has plans to spend around $13 million in new facilities for its electrical and computer engineering department.

Nickels & Dimes

Denelcor, Inc., has privately sold 280,000 shares of common stock at $7.50 per share for a total of $2.1 million. The net proceeds will be used primarily in the manufacture and marketing of its Heterogenous Element Processor computer systems.

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Supershorts

The U.S. Court of Appeals has reversed a lower court decision that had cleared Computervision Corp. of charges of patent infringement against Perkin-Elmer Corp. The case has been remanded to the U.S. District Court for further proceedings. In September 1979, a jury found that the products of the former Cobilt Division of Computervision had not infringed upon either of two Perkin-Elmer patents.

Computervision's attorney has said he will petition the U.S. Court of Appeals for a rehearing of the case.

— — —

Zilog, Inc.'s computer manufacturing operation implemented a temporary four-day workweek, expected to last 90 days, on July 19. The move, which will affect approximately 100 people, is intended to lower the division's inventory level and is a result of the current recessionary economy, according to a company spokesman.

— — —

The Fidelity Union Bank and Citizens First National Bank of New Jersey will offer home banking services through the CBS/AT&T videotex test, utilizing an electronic network called The Treasurer, which was developed and operated by Automatic Data Processing, Inc. Up to 200 homes in Ridgewood, N.J., will have the opportunity to check the status of their accounts, pay bills and transfer funds as well as obtain general banking information through the videotex experiment.

— — —

An international group to promote the use of ¼-in. cartridge tape drives was formed recently by three California-based firms — Cipher Data Products, Inc., Data Electronics, Inc. and Archive Corp. — and Tandberg Data A/S of Oslo, Norway. The initial purpose of the Working Group for Quarter-Inch Cartridge Drive Compatibility is to develop standards that will lead to industrywide compatibility.

— — —

Dataroyal, Inc. and Facit, Inc.'s Data Products Division have combined their U.S. sales, marketing and support capabilities. Peripheral products will be manufactured in several locations including Sweden and Concord, N. H. The products will be marketed from Nashua, N.H. headquarters as well as other locations in the U.S., Europe, Latin America and the Far East.

— — —

Software Centres International of Los Angeles (formerly The Software Store) has received approval from the California Department of Corporations to sell franchises, becoming the first software franchise chain in the world, according to a spokesman.

— — —

North Star Computers, Inc. will invest approximately $10 million to establish manufacturing, marketing support and product developent operations in Cork, Republic of Ireland. The new plant will produce the North Star Advantage line of desktop microcomputers and will include a research and development group.

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Harris Corp. has established a Telecommunications Networks Division that will specialize in the design and building of privately owned communications systems.

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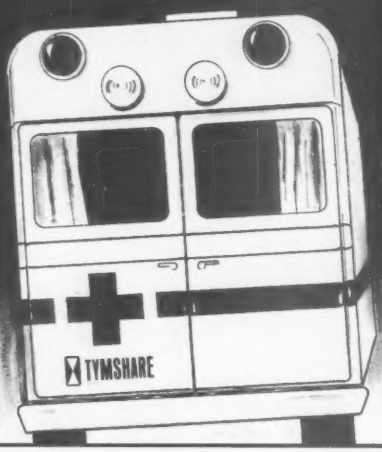

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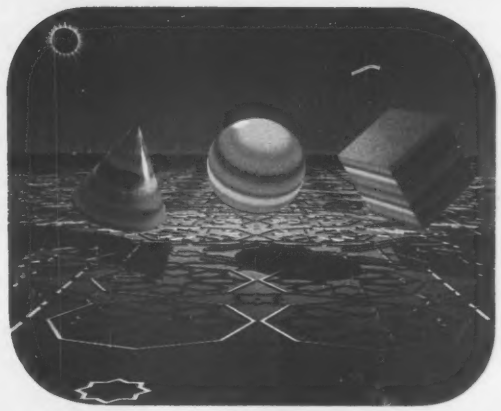

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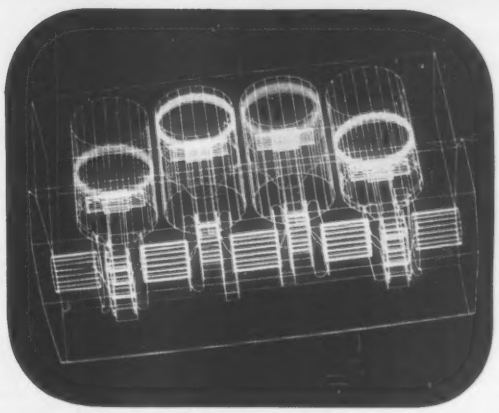

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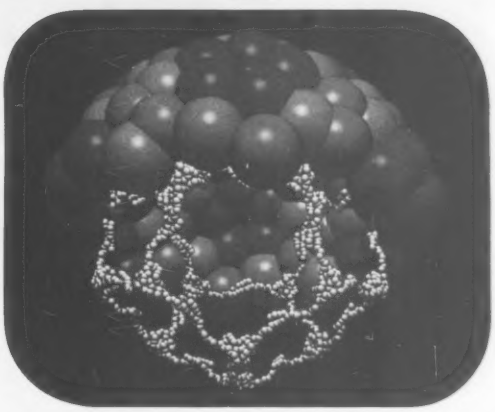

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OMNI Primary Study 1982 MRI Spring 1982

Executive Corner

• John Reutter III has been elected president and chief executive officer of Megasoft Computer Corp.

• Delany E. Blaine has been named vice-president of C3, Inc. and president of its Micro Products Co. Division.

• David J. Herby has been appointed president of Wespercorp's Western Peripherals Division.

• Floyd Crump has been appointed vice-president and general manager, and Charles E. Yates has been named director of support and development at Management Methods, Inc., a wholly owned subsidiary of STSC, Inc.

• Ian S. Durell has been appointed to the new post of general manager of European operations for Informatics General Corp.'s Software Products Group.

• W. Thomas Eley has been appointed vice-president of sales for Manufacturing Data Systems, Inc.

• Edward Siegel has been promoted to vice-president of finance at On-Line Software International, Inc.

• E.J. Watson has been named vice-president and general manager of TSI International, the Systems Software Division of National CSS, Inc.

• Fred T. Melberg has joined Paradyne Corp. as vice-president of finance and administration and chief financial officer.

• Richard K. Davis and Arvind D. Shah have been named principals of Peformance Development Corp.

• Gerald C. Galush has been promoted to vice-president of finance, Eugene V. DiMenna has been named vice-president of manufacturing, succeeding Galush, and Paul Moquist has been promoted to vice-president of marketing for CPT Corp.

• Bruce Menn has been named vice-president of engineering for Micro Five Corp.

• William Paxton has been promoted to the new post of vice-president for product integrity for Florida Computer Graphics, Inc.

• Dino Kapadia has been elected vice-president of Associates Bancorp, Inc., a subsidiary of Associates Corp. of North America.

• William E. McDonald has been named president of Uninet, Inc., a United Telecom Communications, Inc. company.

• Robert W. Camp has been named president of Atex, Inc., a subsidiary of Eastman Kodak Co.

• Joseph R. Ingersoll has been appointed vice-president of marketing for Concept Systems, Inc.

• George M. Hennen has been appointed vice-president of finance and chief financial officer for Syquest Technology.

• Randy Parker has been named vice-president and general manager of National Semiconductor Corp.'s recently formed Microcomputer Systems Division.

• Emil Nastri has been named vice-president of sales for Personal Systems Technology, Inc.

• Frank C. Haskell has been named vice-president of marketing, Larry K. Kromling has been appointed western regional manager and James K. McKinnon has been appointed Midwest regional manager for Spectrum Training Corp.

• Bernard F. Curran has joined Corstar Business Computing Co. as vice-president of sales.

• Stephen O. James and Graham N. Clark have been promoted to senior vice-presidents of Banctec, Inc. James will be responsible for all sales and marketing activities and Clark, vice-president of corporate planning and communications, will add product operations and field engineering to his responsibilities.

• Walter J. Ives has been promoted to vice-president of telecommunications research and development at Hitachi, America, Ltd.

• Richard M. Brenner has joined Corvus Systems, Inc. as vice-president of finance and chief financial officer.

• Thomas J. DeLoia has joined Baron Data Systems as vice-president of marketing.

• Warren R. White has been elected vice-president of Syntech International, Inc.

• Gary Kelson has been named vice-president of product development at Silicon Systems, Inc.

• Charles Morrissey has joined Digital Microsystems, Inc. as vice-president of marketing.

• Warren Winterbottom has been appointed to the new post of vice-president of marketing and sales for the Systems Division of California Computer Products, Inc.

• Serge A. Paravisini has been named to the newly created position of vice-president/U.S. operations of Sopra SA, Information Engineering, a French software firm.

• Kevin R. Murphy has been named vice-president of sales for the TRW-Fujitsu Co. of Los Angeles, a joint venture of TRW, Inc. and Fujitsu Ltd., Japan.

• Robert K. Floyd has been named vice-president of finance and administration for System Development Corp.

• Paul R. Cooper has been named vice-president and general manager of brokerage systems for Bunker Ramo Information Systems, an operating unit of Allied Corp.

• Bradley H. Fonger has been appointed president of Source One Distributor Management.

• Clarence L. Lehman has been named vice-president of research for CPT Corp.

• Paul J. McIntire has been appointed to the new post of vice-president of operations at Diablo Systems, Inc.

• Randy Knox has been appointed vice-president of manufacturing at Davong Systems, Inc.

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! PIE, 200, 90, 120

(either transmitted by the host or entered from the keyboard) will cause the terminal to draw a pie chart sector with a radius of 200 and fill in the area between 90 and 120 degrees. The filled area can be a color in the case of GEN.II Color Retro-Graphics™ products, an intensity level in the case of gray scale GEN.II, or a shading pattern in the case of monochromatic GEN.II.

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Foreign Orders & Installations

Local Digital Distribution Co. has received a contract from Embratel of Brazil for Rapac digital termination systems and associated subscriber systems.

The Saudi Arabian Educational Mission has purchased a Sperry Univac 1100/62 computer system, valued at $2.5 million. The system will be used to provide administrative and financial support to approximately 16,000 Saudi students currently enrolled in U.S. colleges and universities.

Tymshare, Inc. has been awarded a $3 million contract by BP International, UK, for a 27-node, private packet-switched data network.

McDonnell Douglas Automation Co. will supply four Unigraphics DDS-100 terminals and Unigraphics software to the Cranfield Institute of Technology of London. Delivery is scheduled for late summer.

South Western Regional Health Authority has ordered Rediffusion Computers Ltd.'s R400/70 data entry system and an R50 clustered terminal system. The contract is valued at about $158,000.

Sperry Univac has received an order from a farming cooperative, WPK Malmesbury, in Cape Province, South Africa, for its 1100/61 computer and the Mapper software system.

Modular Computer Systems, Inc. (Modcomp) has delivered its fourth Classic 7870 to the London Stock Exchange for installation in their Topic private Viewdata system. This brings the total value of Modcomp computer hardware purchased by the stock exchange to over $1 million. The firm has also sold a 100-port Viewmax system, based on the Classic 7870, to the Jess Corp. of Taiwan. The system is valued at $400,000.

GTE Telenet Communications Corp. will supply the equipment and software for the Norwegian Telecommunications administration's planned national packet-switched network.

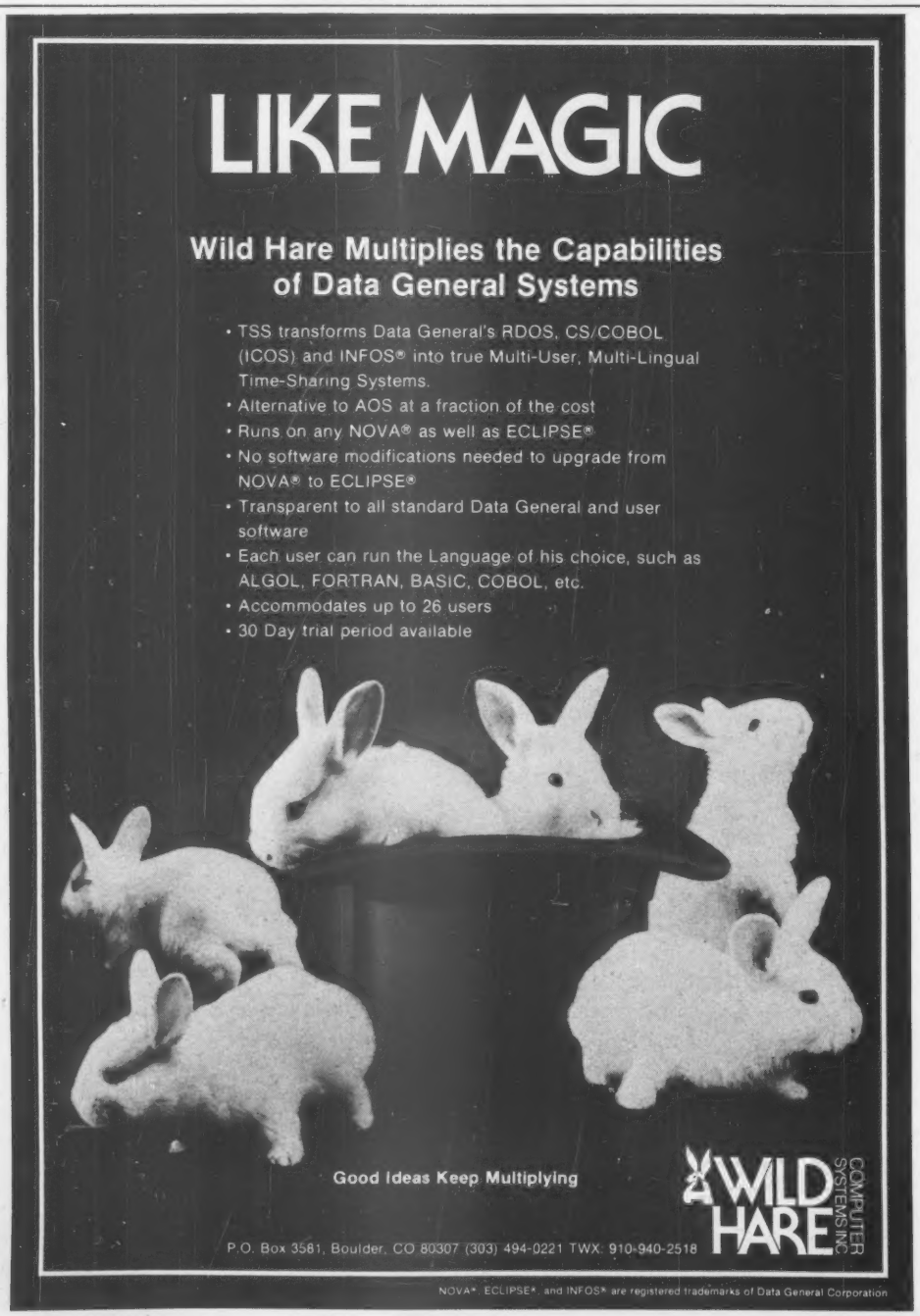
Denelcor, Inc. has received a letter of intent from Messerschmitt-Bolkow-Blohm, Gmbh, of West Germany, for its Heterogeneous Element Processor computer system. The system, valued at $2.2 million, is scheduled to be installed in Munich this year, subject to final contract negotiations.

Ampex Corp. has been awarded a contract to supply 1,800 video display terminals, which will be used by FYCH Financial Information Research, Hong Kong, to link three regional stock exchanges with each other as well as with exchanges in Japan and Europe.

Cray Research, Inc. will install a Cray-1 system for Getia of France. The system represents an upgrade from one million to two million words of memory and will replace a currently leased Cray-1S system. Getia is composed of Electricitie de France and Compagnie Internationale de Services en Informatique. The upgrade is valued at approximately $1.8 million.

Electronic Associates, Inc. (EAI) has shipped a simulation computer valued at $4 million to the Peoples Republic of China. The EAI Hyshare 700 system will be installed at the University of Harbin for use in simulation studies of dynamic systems problems.

A Canadian petroleum company has signed an agreement with National Data Corp. to obtain a license for National Data's new petroleum retail credit, collection and billing software package. Revenues to National Data will be in excess of $600,000.



Contracts & Pacts

Tandon Corp. has received a $43 million order from Televideo Systems, Inc. for Winchester and floppy disk drives.

A second order, valued at $37 million, has been received by the firm from an unidentified manufacturer of small computers.

Kennedy Co. has recently signed a $1 million contract with Korea Telecommunications Co. Ltd. to supply 9700 tape transports that will be used in telephone switching systems.

Honeywell, Inc.'s Information Systems Division has been awarded the U.S. Army's Standard Europeanwide Business Oriented Systems Program contract, valued at $46.8 million. During the first four years of an eight-year contract Honeywell will supply the Army with up to 190 DPS 6 minicomputer systems that will be used to automate administrative support activities in installations in West Germany, the UK, Belgium and Italy.

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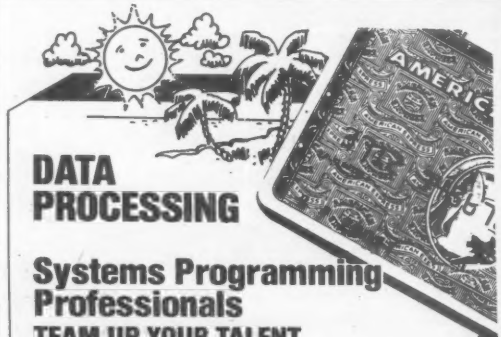

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3-IBM Super/Micr 2-5yr	TX	to 32
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SOFTWARE/SYSTEMS ENGINEERS

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Talk to Tony Bruno, a CSC Defense Systems' Technical Director and arrange a PERSONAL INTERVIEW.

Computer Sciences Corporation believes in talking careers where it is most productive—at the top. We want you to talk to someone who knows how *your* experience can lead to bigger challenges and exceptional rewards.

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Computer Sciences Corporation is the largest hardware-independent, software design and systems development company. The world's leading developer of advanced tactical and strategic command and control defense systems.

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CSC will match your experience and talent with really first class compensation packages. Top salaries, comprehensive benefits and individually tailored relocation assistance. Make the first move today. Call us.

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- Real-Time Computer Program Development
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- Simulation
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- Ada
- Tomahawk, Lamps III
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Systems Programmers—(Intermediate and Senior Level)

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- Digital, Hybrid, and Hardware-in-the-Loop Simulation
- Guidance and Control Systems
- Digital Signal Processing
- FORTRAN-TAL-ASSEMBLY Programming

CSC's Defense Systems Division is coming to:

Washington, DC and Long Island, NY on July 29th

If you will be in either of these cities on these dates, we'd like to get together. Take the first step—Call CSC.

If you are unable to meet with us at this time, please call or forward your resume in confidence to: CSC, Defense Systems Division, P.O. Box N, Dept. 220-CW, Moorestown, NJ 08057.

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CSC

COMPUTER SCIENCES CORPORATION

SOFTWARE DEVELOPERS MAINFRAMES and MICROS

We are looking for three individuals who are dedicated to their profession and are capable of creating software products that are industry leaders and set industry standards. You must be highly motivated, self managing, and able to manage and coordinate all aspects of software product development. Our environment is innovative, with minimal management structure, but our standards of performance are very high.

Now that you know what we expect of our employes, here's what we have to offer. We pay a competitive salary, give a generous benefit package, virtually eliminate the time you have to spend with management, and one thing more — we give you back a share of the gross revenue your product produces. If you are really good and willing to work, a six-digit income is well within your grasp.

The following positions are open to qualified candidates.

Performance Specialist
- Must have thorough knowledge of VTAM and MVS internals.
- Must have extensive experience with software performance monitors.
- Must be an expert in IBM/370 assembler language

Database Specialist
- Must have good knowledge of state-of-the-art database concepts.
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Micro Specialist
- Must be well versed in 808X and 6502 based systems.
- Must have experience interfacing micros to IBM mainframes.
- Must have graphics experience.
- Must be an expert in micro assembler language.
- Pascal and Basic a plus.

If you'd like to put your skills to work with a company that is serious about software, send your resume in complete confidence to:

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Goal Systems International Inc.
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DP PROFESSIONALS-HOSPITALS

A major Southwestern health services organization and its wholly owned data processing service organization are seeking two data processing professionals to design, develop and install on-line patient care information systems at our client hospitals here in Albuquerque, New Meixco. Working closely with health-care professionals, these DP professionals will be implementing leading-edge hospital computer systems.

Both positions require three years of solid experience in the design of on-line systems in a hospital setting. Experience with Technicon's TMIS systems is desirable.

PROJECT MANAGER - Lead a multi-disciplinary team with systems responsibility for patient registration, ADT and Census, Medical Records, and Quality Assurance Programs. The successful applicant will have three years experience as a DP Project Leader and will provide references regarding leadership and the ability to produce results.

SYSTEMS ANALYST - As a staff memeber on a multi-disciplinary team, assume systems responsibility for order entry and results reporting at nursing stations including Operating Rooms and Emergency Department. The successful applicant will have three years experience as a Systems Analyst and will provide references regarding ability to design systems that meet user needs.

Salaries are industry competitive. Those who meet our experience criteria should send a detailed resume with salary history and requirements to:

TOTAL BUSINESS SYSTEMS
P.O. BOX 26027
Albuquerque, NM 87125

Senior Data Base Analyst

Hughes Helicopters, Inc. has an exceptional Senior level position available for a Data Base Analyst.

You will be working in a growing data base environment supporting engineering, financial and manufacturing systems. Major applications include Comserv's AMAPS and McCormick & Dodge's General Ledger.

Qualified applicants must have experience with IDMS release 5.7 and ADS/on-line. UCF/CICS strongly preferred.

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Hughes Helicopters, Inc.

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Our client, a div. of a prestigious Fortune 100 co. offers a unique oppty for a seasoned DP pro with strong managerial skills. Previous exp. managing a minimum of 10 programmers & analysts is required. Additional expertise in IBM mainframes with commercial applications design exp. essential. Respon. include the management of 20 top-notch DP pros & heavy mgmt interface with executive staff. Excient growth potential. This position available due to promotion. Superior benefits package.

$46,000 FEE PAID

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Qualified individuals will have a BSME/BSEE or equivalent, three to five years of experience in the sales of computer peripheral equipment, preferably rotating memories and a strong desire to be a successful sales person.

If you feel you could contribute to the overall growth efforts of Ball Computer Products and that you meet our requirements, we would be interested in talking with you. Please call collect (303) 441-5349, (303) 441-5297 or (303) 441-5350, Monday through Thursday from 7:00 a.m. to 5:30 p.m. You may also send your resume in confidence to: Ball Computer Products Division, attention Deborah Koepke, P.O. Drawer K, Boulder, Colorado 80306.

Ball **Computer Products Division**

A DIVISION OF BALL CORPORATION
An Equal Opportunity Employer M/F

INSURANCE DP INDEPENDENT CONTRACTORS

(Analysts/Programmers)

NY, NJ, PA, OH, AZ, MD, ONT and other N. American areas
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Send Resume to:

Int'l Insurance Systems, Inc.
Suite 1000
Ten Penn Center Plaza
Philadelphia, PA 19103

DEC-10 SYSTEMS PROGRAMMER

SDC has an immediate need for DEC-10 Systems Programmers with the following qualifications:

- Knowledge of TOPS-10 internals
- 2 years' experience with monitor support
- Proficiency in COBOL, FORTRAN and knowledge of SYSTEM 1022
- Communication skills required interacting with customers and management

Please send resume to: Rosemarie Bagdasarian, or call (617) 494-2281.

System Development Corporation
55 Broadway, Cambridge, MA 02142

SDC
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National Openings With Client Companies and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide; you decide.

RSVP SERVICES, Dept. C
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P.O. Box 5013
Cherry Hill, New Jersey 08034
(609) 667-4488

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Computerworld
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Framingham, MA 01701

Carnegie-Mellon University

DIRECTOR OF ADMINISTRATIVE SYSTEMS
(Search Extended)

The Challenge

Carnegie-Mellon University views computing as a central resource for scholarship, instruction, and administration. Already a leader in university computing, CMU is planning a network of powerful personal computers for faculty, staff and students. An experienced, dedicated and creative manager is needed to lead the administrative systems group in this period of innovation. Communications skills will be vital.

The Position

Responsible for leading the administrative computing effort. Expected to support the university administration through implementation of a distributed management information system. Responsible for the management of the administrative systems staff. Will work closely with the director of academic computing to provide faculty and students access to information in support of instruction, research and campus affairs. Responsible for integrating information systems with university-wide text and office management systems. Requires substantial management experience in administrative computing, including a strong background in the management of software development projects.

The Benefits

Carnegie-Mellon is a major research university maintaining a tradition of high quality professional education and research. CMU's faculty include Nobel Prize winner Herbert Simon and seven national academy members in scientific fields. The university offers an excellent benefit package including tuition remission. The CMU campus adjoins 450 acre Schenley Park, is surrounded by an attractive and affordable residential area and is only four miles from downtown Pittsburgh. Pittsburgh is the nation's third largest center of corporate headquarters. The city is also a leading area for research and development. Pittsburgh boasts a sparkling downtown, a multitude of cultural enticements and sports events as well as lodging, restaurants and mass transit. A recent study of the quality of life in urban areas ranked Pittsburgh fourth in the country.

Call or write today about this opportunity.

Douglas E. Van Houweling
Vice Provost for Computing and Planning
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Carnegie-Mellon University
5000 Forbes Avenue
Pittsburgh, Pennsylvania 15213
(412) 578-2122

Carnegie-Mellon University

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HARDWARE • SOFTWARE

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- HONEYWELL 6000 SYSTEMS/LEVEL 6/66/40 DUAL/IDS/DM4/COBOL/GCOS/GMAP
- UNIVAC 1100 (EXEC 8) OR 90 SERIES (OS 3) OS 1100 OR OS/3 INTERNALS DMS - 1100 - TIP/CMS/QLP/ASC 11 COBOL
- DEC - PDP 11/23/34/44/45/70 - VAX 11 780 RSX 11M/K RSTS/E - VAX VMS - MACRO - 11, BASIC 2, FORTRAN/ASSEMBLY LANGUAGE
- NCR 8550/8585/8200 - VRX/IMOS/STORE IV TRAN PRO - NEAT 3/COBOL ON LINE - SPECIAL NEED FOR CIF
- BURROUGHS 3890/4700/6700/6800 - ALL SOFTWARE NEEDED

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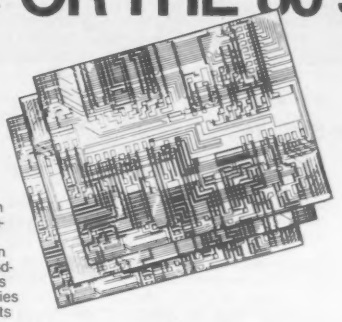
CAD/CAM FOR THE 80's



Applicon develops, manufactures and markets interactive graphics systems used in computer-aided design and computer-aided manufacturing (CAD/CAM) applications. Applicon systems are designed to improve productivity through the automation and integration of many design, analysis, drafting and manufacturing operations.

Applicon CAD/CAM systems are utilized in three broad application areas: design and manufacture of mechanical and electromechanical products such as automobiles, office equipment, and machine tools; design and manufacture of electronic circuits including printed circuit boards, integrated circuits and hybrid circuits; and the design of facilities and structures such as manufacturing plants and power generation plants.

The driving force behind this technology is a growing organization of computer hardware and software engineers, marketing professionals and other personnel who make it possible for Applicon to help industry meet the design challenges of the 1980's.

We have the following openings:

LANGUAGE DESIGNERS/ PROGRAMMERS

Opportunities exist in our Systems Software Development group for programmers to design and implement software for an interactive command language processor. Experience with both compiled and interpreted language is desired. BS/MS Computer Science or Math and experience with high-level language programming (PL/1, Fortran, Pascal) and 3-5 years of hands-on mini-computer experience is preferred.

Contact J. Stone

GRAPHICS EDITOR PROGRAMMERS

You will actively assist in the design and implementation of a next generation graphics editing system using state-of-the-art software and hardware technology. Prior experience with minicomputer-based graphics systems and/or geometric construction and modeling techniques is highly desirable. BS/MS Computer Science or Math and experience with high-level language programming (PL1, Fortran, Pascal) and 3-5 years hands-on mini-computer experience is preferred.

Contact J. Stone

PROGRAMMER/ANALYST (MIS)

We are seeking an energetic and creative programmer/analyst to contribute to our order processing/marketing systems success. This individual will work in a challenging high growth environment as a key member of a group helping to develop and support applications for Contracts, Marketing and Sales. Our systems environment includes files and data-base on-line and batch processing, procedural languages and application development tools. Two or more years of programming experience is required. Experience with DOS/VSE, DL/1, COBOL and structured programming is a plus.

Contact J. Stone

APPLICATIONS PROGRAMMERS (MIS)

We are actively seeking programmers to work on the implementation of new Financial, Marketing and Manufacturing systems. Two or more years of COBOL programming in an IBM environment required. Experience in the following areas a plus: DOS/VSE, JCL, CICS, data-base management, and on-line systems.

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SOFTWARE ENGINEER—Microprocessor Applications

We are actively seeking a Software Engineer with strong skills in Z-80 microcode programming. This individual will be responsible for programming tasks to drive electro-mechanical devices including our own line of plotting equipment. You will be part of a small team within our Systems Development group, seeing projects through from specification and design to implementation. Appropriate education, exposure and working knowledge of DEC-VAX/VMS systems would be highly desirable and three plus years of hands-on industry experience preferred.

Contact J. Stone

SOFTWARE SUPPORT SPECIALIST—IC Applications

This position will provide support and assistance for our existing VLSI design applications, as well as new software assessment. Experience of 3 years in IC design/development, preferrably using a CAD/CAM system, BSEE or CS. Strong communication skills and ability to diagnose and resolve issues is necessary. RSX-11M knowledge preferred.

Contact D. MacLeod

TECHNICAL WRITER

The technical manuals, user guides to be created by this position, document a VAX/VMS product line that addresses Mechanical Engineering and Manufacturing applications. Three years experience writing technical documentation and knowledge of engineering graphics or drafting are ideal qualifications. Knowledge of Fortran or PL1 is desirable.

Contact D. MacLeod

SOFTWARE SUPPORT SPECIALIST—PCB Applications

The emphasis of this position is to support existing two dimensional software products; to analyze and correct reported malfunctions, as well as assessment of prereleased software. The ideal candidate has 3 years experience in PCB design or layout, written high level programming applications and hands-on mini-computer knowledge. As well, candidates should possess good judgment to determine critical issues and good communication skills.

Contact D. MacLeod

ELECTRONIC APPLICATIONS SPECIALIST
Industry Marketing

The focus of this broad based position is to provide electronics expertise for computer aided engineering. Responsibilities include development of product applications and marketing plans to enhance system productivity and to communicate these applications to prospects and customer base. The development team includes engineering and sales support functions. This position requires 3-5 years experience in CAD/CAM electronic industry marketing and a BSEE.

Contact D. MacLeod

COMMUNICATION SPECIALIST—Electronic Materials

This position has responsibility for developing promotional plans for the electronic marketing disciplines. This entails creating product support materials, such as brochures, application briefs, mail campaigns and press releases. This candidate must have excellent writing skills, knowledge of graphic arts production and familiarity with the methods of PCB or IC design and fabrication. BS/BA and 5 years directly related experience required.

Contact D. MacLeod

We recognize and reward individual achievement, while offering the potential for phenomenal career growth and accomplishment. We offer an excellent starting salary, coupled with a superior benefit program including dental insurance and tuition reimbursement.

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Applicon
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DATA PROCESSING PROFESSIONALS

Best Products Co., Inc. the nation's leading catalog showroom merchandiser with over 1 billion dollars in sales, has recently completed a long range strategic plan for its Data Processing Division. The direction set by the plan is one of total resystemization of our applications portfolio. We will be developing these new systems in an Amdahl Hardware environment utilizing IMS DB/DC under SPF and TSO.

These efforts will require additional staffing in the following areas:

• SYSTEMS DEVELOPMENT

Project Leaders - Senior level individuals with experience in successfully managing large complex projects.

Systems Analysts - applicants must have experience in the design and implementation of medium to large scale applications. Excellent oral and written communication skills are required.

Programmer/Analysts - COBOL programmers must be able to carry out small projects from start to finish with minimum supervision. IBM/Honeywell experience is a plus.

• DATABASE ADMINISTRATION

Database Analysts - Minimum of two years' experience in the design and implementation of IMS databases. Applicants must be willing to work as an integral part of systems development teams.

• TECHNICAL SUPPORT

Technical Support Manager - Minimum of three years' management experience with knowledge of MVS intrinsics and associated program products.

We are looking for assertive self-motivated individuals to join our existing professional staff in providing a state-of-the-art Data Processing Division to support Best's continued expansion and diversification. We offer competitive salaries and excellent company paid benefits. Best is centrally located in Richmond, Virginia, just two hours from Washington, DC to the north, two hours from Virginia Beach to the east, and two hours from the Blue Ridge Mountains to the west. For consideration, submit resume and salary history to:

Employment Manager

BEST PRODUCTS CO., INC.

P.O. Box 26303, Richmond, VA 23260

BEST

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Systems Programmer

Johnson & Johnson, a world-wide leader in the health care industry is seeking a Systems Programmer to support its corporate DECsystem-10 Timesharing System. The successful candidate should possess a degree in computer science or mathematics. A Masters Degree is preferred. The individual should have 3 years working experience on the TOPS-10 or TOPS-20 operating system plus knowledge of MACRO-10, ASSEMBLY, and FORTRAN languages.

Additional responsibilities include:

- the installation, maintenance, and documentation of system software
- education of system users in the application of this software
- monitoring system performance and capacity, and system fine tuning.

Interested candidates are requested to send detailed resume including salary history in confidence to: Lorraine C. Kirczow, Johnson & Johnson, Management Information Center, Route 202, Raritan, N.J. 08869

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Working in a state-of-the-art environment, you will utilize 3 new IBM 3081s, working with MVS/SP 1.3, IMS and distributed processing. This unit supports and maintains data management software, tape management software UCC-ONE, installs and maintains operating system releases and supports mass storage, TSO/SPF and performance tuning. Ideal candidates should possess 3 years experience with MVS internals, SMP-4, plus have working knowledge of Assembler, SPF and JES2. Experience on a 3081 is desirable.

• Agency Interface

Install and maintain test and production CICS/VS systems running under VM/SP-DOS/VSE on a stand alone 4341. Responsibilities include tuning and/or upgrading the CICS systems as well as defining and enforcing user standards. Qualified applicants will have thorough knowledge of a state-of-the-art CICS/VS environment; familiarity with 3270 type interactive processing and 3780 type batch processing are desirable.

Work and live in one of the most beautiful, exciting areas in the country ... minutes from cosmopolitan San Francisco, superb schools and outstanding cultural programs ... or minutes from the Wine Country, Lake Tahoe or the seashore!

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Progressive Southern Ohio manufacturer is seeking a Programmer/Analyst to participate in the growth of our Data Processing Department. Applicant should have a Bachelors Degree in Computer Science or Data Processing and two or more years of solid Programming experience. Experience with IBM S/38 and RPG III preferred. Starting salary will be commensurate with experience and education. We are an Equal Opportunity Employer and offer a complete fringe benefit package.

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Data Processing Instructor

Bachelor's degree and 3 years teaching experience or equivalent industrial or business experience required. Must be technically competent in RPG II, BASIC, and COBOL Programming languages, and knowledgeable in ASSEMBLER, FORTRAN, and PL/1. Salary based on education and experience. Starting date is September 1, 1982. Mail resume by August 9, 1982 to the **Personnel Office, Sumter Area Technical College, 506 North Guignard Dr., Sumter, SC 29150.**

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3900 North Central, Suite 1001
Phoenix, Arizona 85012
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ILLINOIS

PROGRAMMER - PROGRAMMER ANALYSTS

If you're a specialist on the IBM 34 and eager for new opportunities we may have something to offer you. We have CLIENTS that have 34's tied to IBM 3081's, clients that use RPG II and COBOL. Manufacturing clients, banking clients, service clients, retail clients, insurance clients, clients in small towns, clients in large towns, clients that want you to travel, clients that want you to stay put.

Well, if you go to the Art Institute, you expect art, don't you? We have CLIENTS! To $28,000 range.

One + years experience please.

Contact: Sandy White

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(312) 782-6930

Systems Programmers

Many things fly, maneuver and run on software at Kearfott. Including careers.

Whatever your software specialty, you have a choice of career paths at Kearfott—in operating systems...commercial applications...and scientific programming. Right now we're engaged in many of the most difficult, stimulating, and ultimately rewarding technological undertakings imaginable. And all of our dozens of on-going projects depend on strategic software advances in communications, logistics, MIS and guidance systems.

At our Data Center, one of the country's most sophisticated information services where state-of-the-art innovations are the norm, you'll be joining an elite software systems group that maintains IBM and Amdahl mainframe computers with supporting software that includes MVS/SE-2, SE/A, JES 2, IMS DB/DC, CICS, TSO, WYLBUR, ACF/VTAM, ACF/NCP, SAS, information systems. This Center is tied in to all our plants via an on-line computer and provides an instant interchange of technical data. Here you'll have the opportunity to develop user-friendly software and become involved with educating company users and consulting on, and resolving, daily problems.

In MIS—the expanding sphere that has helped give Kearfott's rarefied environment a very solid basis—you'll run the gamut. Accounting. Finance. Payroll. Inventory and manufacturing controls. All involve COBOL programming, CICS, MVS, IMS, and data base design and Telecommunications.

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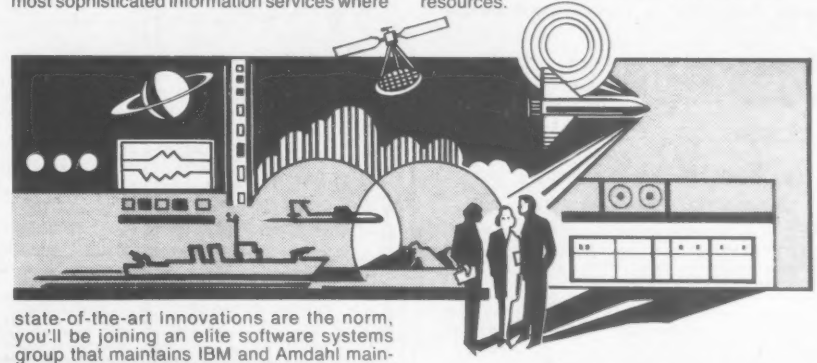

The path of the future for software professionals can begin with Kearfott if you have the minimum of 3 years experience in a large-scale IBM or HP 2100 MUX environment that we require.

Find out why software careers fly higher at Kearfott by sending your resume to: Carol Batte, Singer Company, Kearfott Division, 1150 McBride Avenue, Little Falls, NJ 07424.

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Computers

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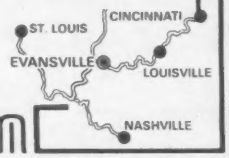

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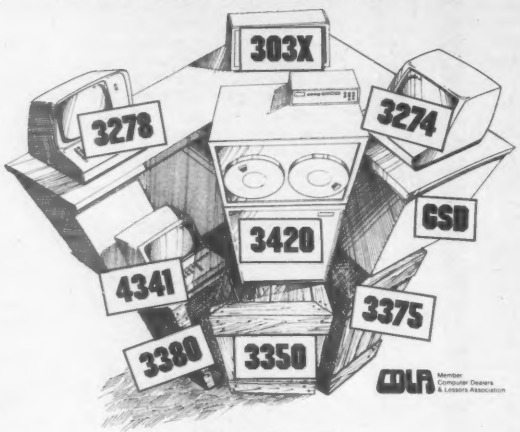

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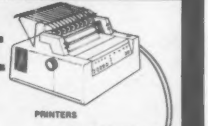

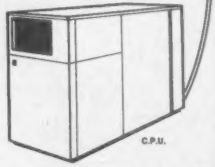

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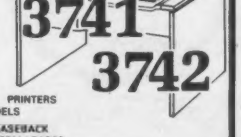

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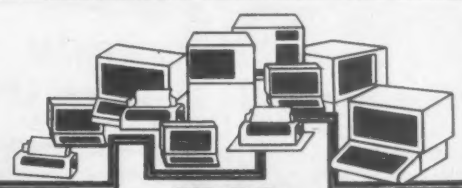

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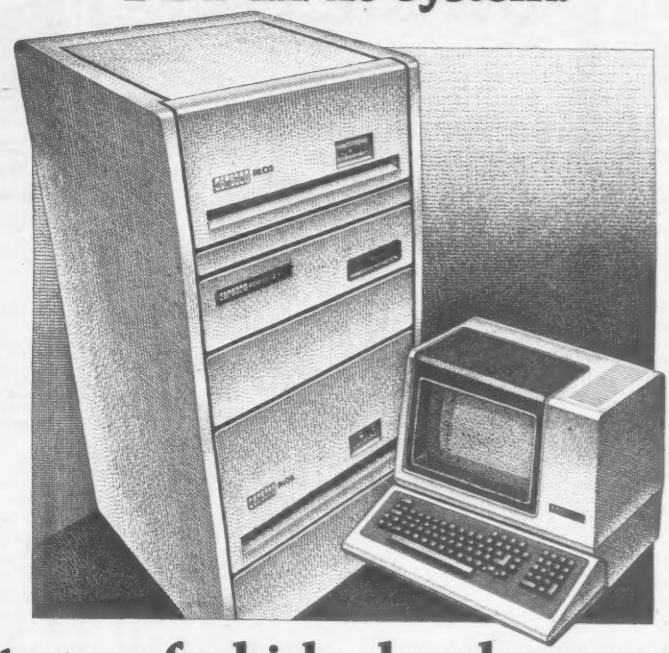

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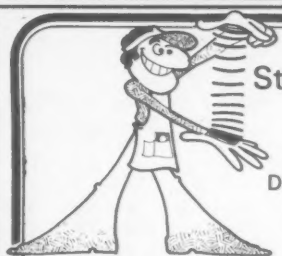

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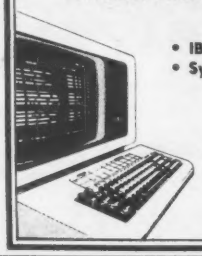

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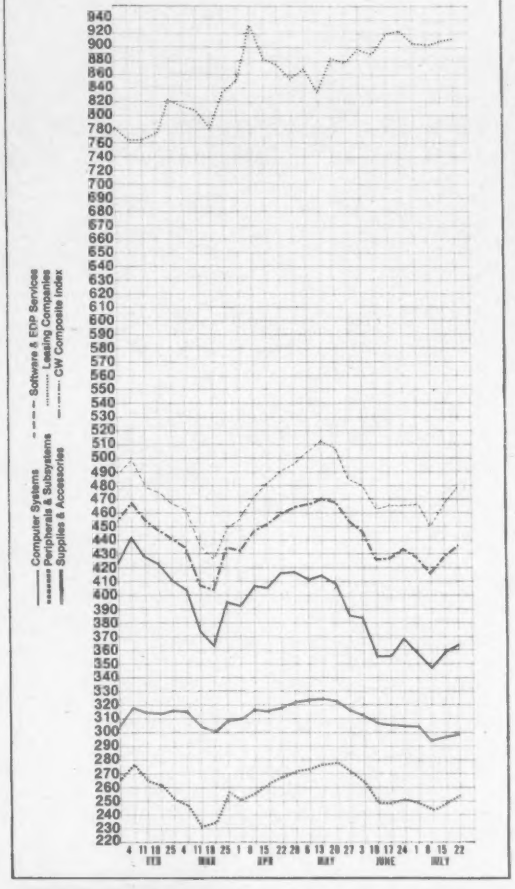

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CLOSING PRICES WEDNESDAY, JULY 21, 1982

All statistics compiled, computed and formatted by TRADE QUOTES, INC. Cambridge, Mass. 02139

E X C H		1981-82 RANGE (1)	CLOSE JUL 21 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	18- 46	20 3/8	+1 3/8	+7.2
N	BURROUGHS CORP	28- 72	32 5/8	+1 3/8	+4.3
O	COMPUTER AUTOMATION	8- 28	9 1/8	0	0.0
N	CONTROL DATA CORP	19- 42	26	- 1/2	-1.8
N	CRAY RESEARCH INC	20- 48	25 1/8	+2 1/8	+8.2
N	DATA GENERAL CORP	24- 87	25 7/8	-1	-3.7
N	DATAPOINT CORP	11- 68	13 7/8	+2 1/4	+19.3
N	DIGITAL EQUIPMENT	66-113	68	-1 1/2	-2.1
A	EECO INC	6- 18	7 1/2	- 3/8	-4.7
N	ELECTRONIC ASSOC.	5- 13	8 3/8	+ 1/4	+3.0
N	FLOATING POINT SYST	13- 30	19 3/4	+ 1/2	+2.5
N	FOXBORO	25- 82	28	+ 3/4	+2.6
O	FULCRUM COMP GRP	1- 3	1 1/4	0	0.0
O	GENERAL AUTOMATION	3- 18	3 1/2	0	0.0
N	HARRIS CORP	21- 60	26 5/8	+1 1/8	+4.4
N	HEWLETT-PACKARD CO	33- 54	46 1/2	+1 1/8	+2.4
N	HONEYWELL INC	63-115	67 1/2	- 1/2	-0.7
N	IBM	48- 73	67 1/2	+ 5/8	+0.9
O	IPL SYSTEMS INC	6- 13	6 1/4	+ 1/2	+8.6
O	MAGNUSON COMP SYSTS	2- 32	2	- 1/2	-20.0
N	MANAGEMENT ASSIST	8- 26	10	- 3/4	-6.9
O	MINI-COMPUTER SYST	0- 4	1/4	0	0.0
N	MODULAR COMPUTER SYS	7- 32	7 3/8	- 1/4	-3.2
N	MOHAWK DATA SCI	10- 32	12 3/4	+ 1/2	+4.0
N	NCR	39- 76	51 1/2	-4 1/2	-8.0
N	PERKIN-ELMER	18- 38	20 1/8	+1 7/8	+10.2
N	PRIME COMPUTER INC	16- 49	17 5/8	- 1/2	-2.7
N	SPERRY CORP	21- 65	3	-2 3/8	-9.3
O	TANDEM COMPUTERS INC	13- 35	18 3/4	+ 1/4	+1.3
N	TEXAS INSTRUMENTS	71-151	82 7/8	+2 1/2	+2.7
A	WANG LABS.	22- 46	25 1/2	+ 1/2	+2.0
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	18- 28	22 1/2	0	0.0
N	COMDISCO INC	18- 27	18 7/8	+1 3/8	+7.4
B	COMMERCE GROUP CORP	1- 1	5/8	0	0.0
O	COMPUTER INVSTRS GRP	1- 2	3/8	0	0.0
O	CONTINENTAL INFO SYS	4- 8	7 1/2	0	0.0
N	DPF INC	5- 13	8 3/8	- 3/8	-4.2
O	ITEL	1- 5	5/8	0	0.0
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 30	22 1/4	+ 1/4	+1.1

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E X C H		1981-82 RANGE (1)	CLOSE JUL 21 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 8	1 5/8	0	0.0
O	ADVANCED SYSTEMS INC	10- 15	11 3/4	+ 1/2	+4.4
O	AGS COMPUTERS INC	7- 10	8 1/4	-1 1/4	-13.1
O	ANACOMP INC	10- 18	12 3/8	-1 1/4	-9.1
O	ANALYSTS INTL CORP	3- 14	8	0	0.0
A	APPLIED DATA RES.	13- 23	21 7/8	+2 3/8	+12.1
O	ASK COMPUTER SYSTEMS	11- 17	15 7/8	+ 1/8	+0.7
B	ASTRADYNE COMP IND	1- 3	1 1/4	0	0.0
N	AUTOMATIC DATA PROC	22- 32	24 1/2	- 1/8	-0.5
O	COA COMPUTER ASSOC	4- 25	8 1/2	+ 1/2	+8.3
O	COMPUTER ASSOC INT'L	12- 20	19	+ 1/4	+1.3
O	COMPUTER HORIZONS	1- 3	2 1/4	+ 1/8	+5.8
O	COMPUTER NETWORK	4- 8	8 1/2	+ 1/4	+4.0
N	COMPUTER SCIENCES	11- 30	13	+ 1/8	+0.8
O	COMPUTER TASK GROUP	10- 23	13 1/2	+2 3/4	+25.5
O	COMPUTER USAGE	2- 10	2 5/8	+ 1/8	+5.0
O	COMSERV CORP	8- 18	13	+ 1/4	+1.9
O	COMSHARE	6- 21	8 5/8	+ 7/8	+15.2
N	CULLINANE DATABASE	15- 37	30 7/8	+2 5/8	+8.2
O	CYCARE SYSTEMS INC	8- 14	10 3/4	0	0.0
O	DATA DIMENSIONS INC	1- 3	3/8	0	0.0
O	DATATAB	1- 4	1/2	0	0.0
O	DYATRON CORP	2- 11	2 7/8	+ 3/8	+15.0
N	ELECTRONIC DATA SYST	15- 30	27	- 3/8	-1.3
O	INFORMATICS INC	10- 23	12 1/4	+ 3/4	+6.5
O	INSYTE CORP	1- 3	2 5/8	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/4	0	0.0
O	KEANE ASSOCIATES	4- 8	4	0	0.0
A	LOGICON	12- 38	15 3/4	- 1/8	-0.7
O	MNGT SCI AMER INC	17- 28	21 1/4	+1	+4.8
O	MATHEMATICA INC	12- 26	14	0	0.0
O	MATHEMATICAL APP GRP	14- 28	17	- 1/2	-2.8
O	NATIONAL DATA CORP	13- 28	14 7/8	- 1/2	-3.2
O	PANSOPHIC SYSTEMS	8- 15	11	+ 1/4	+2.3
N	PLANNING RESEARCH	5- 13	8 7/8	+ 1/4	+3.7
O	PROGRAMMING & SYS	1- 2	1 3/8	0	0.0
O	REYNOLDS & REYNOLD	16- 28	21	+ 1/2	+2.4
O	SEI CORP	17- 28	23 1/4	+ 1/2	+2.1
O	SHARED MEDICAL SYST	26- 37	31 1/4	+ 1/2	+1.6
O	STSC INC	8- 28	8 7/8	+ 1/8	+1.2
O	SCIENTIFIC COMPUTERS	8- 18	8 3/4	- 1/4	-3.5
O	SOFTWARE AG	5- 23	8 3/8	+ 1/8	+2.0
N	TYMSHARE INC	13- 58	15	+ 3/4	+5.2
A	URS CORP	10- 18	10 3/8	- 1/2	-4.5
N	WYLY CORP	7- 20	10 1/8	+1 1/4	+14.0
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	1- 15	1 1/8	-	-5.3
A	ANDERSON JACOBSON	8- 28	8 1/4	- 1/8	-1.3
O	AUTO-TROL TECHNOLOGY	8- 62	12 1/2	+ 1/4	+2.0
O	BANCTEC INC	7- 35	8 1/2	+ 3/4	+8.8
O	BEEHIVE INT'L	8- 18	8	- 1/8	-2.0
A	BOLT,BERANEK & NEW	8- 25	15 3/8	+ 1/2	+3.3
O	CAMBEX CORP	2- 8	1 7/8	- 1/8	-8.2
N	CENTRONICS DATA COMP	7- 40	8 7/8	- 3/8	-4.0
A	CETEC CORP	4- 8	4 3/8	0	0.0
O	COGNITRONICS	2- 11	3 7/8	+ 1/4	+8.8
O	COMPUTER COMMUN.	1- 2	1/2	0	0.0

E X C H		1981-82 RANGE (1)	CLOSE JUL 21 1982	WEEK NET CHNGE	WEEK PCT CHNGE
A	COMPUTER CONSOLES	18- 28	21 1/8	- 1/8	-0.5
O	COMPUTER DEVICES INC	4- 10	8 1/2	+1 1/4	+15.1
O	COMPUTER TRANSCEIVER	3- 9	5	- 7/8	-14.8
N	COMPUTERVISION CORP	20- 48	24 1/2	-2 1/2	-9.2
N	CONRAC CORP	17- 28	23 5/8	0	0.0
A	DATA ACCESS SYSTEMS	2- 15	1 1/2	- 1/8	-7.6
A	DATAPRODUCTS CORP	16- 44	18 1/4	+ 3/8	+1.9
O	DATARAM CORP	4- 15	6 7/8	+ 5/8	+10.0
O	DATUM INC	2- 5	2 1/8	+ 1/4	+13.3
O	DAVID JAMISON CARLYL	3- 7	3 7/8	+ 3/4	+24.0
O	DECISION DATA COMPUT	3- 8	4 3/4	+ 1/8	+2.7
O	DELTA DATA SYSTEMS	1- 4	1 1/2	0	0.0
N	ELECTRONIC M & M	3- 9	4 3/4	+ 1/2	+11.7
O	EVANS & SUTHERLAND	18- 40	23 1/4	- 1/4	-1.0
N	GEN'L DATA COMM IND	7- 19	10	+1	+11.1
O	GENERAL TERMINAL CP	0- 4	3/8	0	0.0
O	GREAT SOUTHWEST IND	1- 12	3 3/4	0	0.0
N	HAZELTINE CORP	18- 35	26 7/8	- 3/8	-1.3
O	INFORMATION INTL INC	8- 17	11 1/2	+ 1/4	+2.2
O	INTEL CORP	21- 51	33 1/2	+2 1/4	+7.1
O	IPL SYSTEMS INC	5- 15	6 1/4	+ 1/2	+8.6
A	LUNDY ELECTRONICS	7- 18	10 3/4	+1 1/8	+11.6
A	MSI DATA CORP	11- 27	15	+ 1/8	+0.8
O	NETWORK SYSTEMS CORP	14- 25	18 3/4	- 1/8	-0.6
O	OMEX	3- 8	3 1/2	0	0.0
N	PARADYNE CORP	25- 52	31 3/4	+1 3/4	+5.8
A	PENRIL CORP	7- 17	8	- 1/8	-1.3
O	RAMTEK CORP	8- 23	15 1/2	-2 1/2	-13.8
N	RECOGNITION EQUIP	4- 21	4 1/2	+ 3/8	+8.0
O	SCAN DATA	1- 5	1 1/4	0	0.0
N	STORAGE TECHNOLOGY	18- 40	20	-1 1/8	-5.3
O	SYKES DATATRONICS	8- 34	13 1/4	+ 1/4	+1.9
A	T BAR INC	7- 18	7 5/8	- 1/8	-1.6
A	TEC INC	4- 11	10 1/4	+ 3/4	+7.8
N	TEKTRONIX INC	43- 70	54	+2	+3.8
N	TELEX	5- 10	8	+ 1/8	+1.4
O	TESDATA SYSTEMS CP	3- 17	3 1/8	- 1/8	-3.8
A	TIMEPLEX INC	7- 18	8 3/4	0	0.0
O	VISUAL TECHNOLOGY	10- 15	11 1/2	0	0.0
O	WILTEK INC	1- 3	1	0	0.0
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 17	12 3/4	0	0.0
O	BALTIMORE BUS FORMS	1- 2	1	0	0.0
N	BARRY WRIGHT	14- 24	15 1/2	+1 7/8	+13.7
O	CYBERMATICS INC	1- 2	1	0	0.0
A	DUPLEX PRODUCTS INC	12- 17	13 7/8	+ 1/8	+0.8
N	ENNIS BUS. FORMS	15- 23	20 1/4	+ 1/8	+0.8
N	3M COMPANY	48- 85	58 3/8	+ 3/4	+1.3
O	MOORE CORP LTD	28- 38	28 7/8	+2 1/8	+7.8
N	NASHUA CORP	10- 33	10 1/8	- 7/8	-7.8
O	STANDARD REGISTER	30- 43	38 1/4	- 1/2	-1.2
A	TAB PRODUCTS CO	14- 30	13 5/8	- 5/8	-4.3
N	WALLACE BUS FORMS	22- 38	30 3/4	+ 1/8	+0.4

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